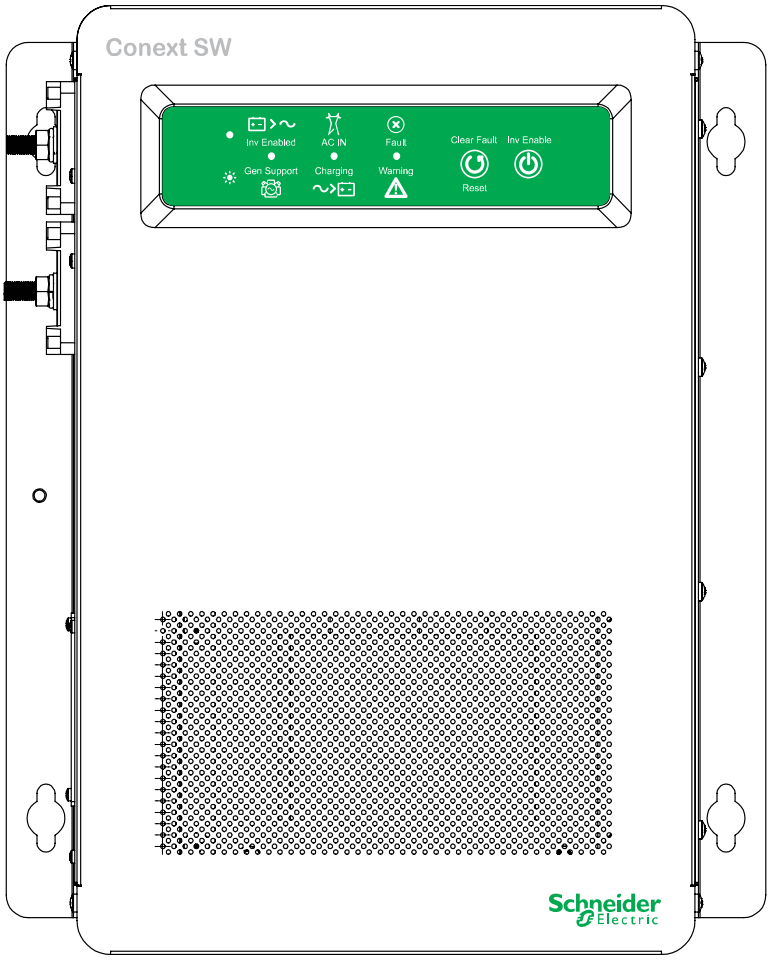
Conext™ SW Inverter Charger

Conext SW 2524 120/240 Split-phase (865-2524)
Conext SW 4024 120/240 Split-phase (865-4024)

Owner's Guide



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Document Number: 975-0638-01-01 **Revision:** Rev A **Date:** 12-2012

Product Part Numbers: 865-2524, 865-4024

Contact Information www.schneider-electric.com

For country details please contact your local Schneider Electric Sales Representative or visit the Schneider Electric website at:

http://www.schneider-electric.com/sites/corporate/en/support/operations/local-operations/local-operations.page

Information About Your System

As soon as you open your product, record the following information and be sure to keep your proof of purchase.

Serial Number _____

Product Number _____

Purchased From _____

Purchase Date _____

About This Guide

Purpose

The purpose of this Owner's Guide is to provide explanations and procedures for operating, troubleshooting, and maintaining the Conext SW Inverter/Charger.

Scope

The Guide provides safety guidelines, as well as information about operating and troubleshooting the unit. It does not provide details about particular brands of batteries. You need to consult individual battery manufacturers for this information.

Audience

The Guide is intended for users and operators of the Conext SW Inverter/Charger.

Organization

This Guide is organized into the following chapters.

Chapter 1, "Introduction" covers material list, key features, and basic protection features.

Chapter 2, "Components and Mechanical Features" provides detailed information on system components and the product's main features.

Chapter 3, "Operation" provides operational instructions from the Front Panel including operation using the System Control Panel (SCP).

Chapter 4, "Configuration via SCP" provides instructions to change inverter and charger settings using the System Control Panel (SCP).

Chapter 5, "Troubleshooting" covers normal troubleshooting guidelines that also includes fault detection and warning codes and how to interpret them.

Chapter 6, "Specifications" covers product specifications.

Conventions Used

The following conventions are used in this guide.

⚠ DANGER

DANGER indicates an imminently hazardous situation, which, if not avoided, will result in death or serious injury.

⚠ WARNING

WARNING indicates a potentially hazardous situation, which, if not avoided, can result in death or serious injury.

⚠ CAUTION

CAUTION indicates a potentially hazardous situation, which, if not avoided, can result in moderate or minor injury.

NOTICE

NOTICE indicates a potentially hazardous situation, which, if not avoided, can result in equipment damage.

Abbreviations, Acronyms, and Symbols

AC	Alternating Current	**LED**	Light Emitting Diode
AGS	Automatic Generator Start	**SCP**	System Control Panel
BOS	Balance of System	**SW**	Sine Wave
DC	Direct Current	**VAC**	Volts, Alternating Current
PPE	Personal Protective Equipment	**VDC**	Volts, Direct Current
PV	Photovoltaic	⏚	Ground

Related Information

You can find more information about Schneider Electric as well as its products and services at www.schneider-electric.com.

Important Safety Instructions

READ AND SAVE THESE INSTRUCTIONS – DO NOT DISCARD

⚠ DANGER

ELECTRICAL SHOCK AND FIRE HAZARD

Installation must be done by qualified personnel to ensure compliance with all applicable installation and electrical codes and regulations. Instructions for installing the Conext SW are provided in a separate installation guide for use by qualified installers only.

Failure to follow these instructions will result in death or serious injury.

⚠ DANGER

ELECTRICAL SHOCK AND FIRE HAZARD

- Read all instructions, cautionary markings, and all other appropriate sections of this guide before operating, troubleshooting, and performing maintenance on the Conext SW.
- Exercise extreme caution at all times to prevent accidents.
- Do not cover or obstruct ventilation openings.
- Do not mount in a zero-clearance compartment. Overheating may result.
- Charge only lead-acid batteries.
- Do not open nor disassemble the inverter/charger. There are no user-serviceable parts inside.
- Do not expose to rain or spray.
- Disconnect and lockout all AC and DC sources before servicing. Servicing includes maintenance or cleaning or working on any circuits connected to the inverter/charger. See following note

Failure to follow these instructions will result in death or serious injury.

NOTE: Turning off inverter mode using the Inv Enable switch on the front panel, disabling the inverter and charger functions using the SCP, and putting the unit in Standby mode will not reduce an electrical shock hazard.

⚠ DANGER

ELECTRIC SHOCK HAZARD

- **For indoor use only.** This inverter/charger is designed for off-grid, solar, backup, and hybrid applications. See the installation guide for information.
- Do not operate the inverter/charger if it has been damaged in any way.
- Do not operate the inverter/charger with damaged or substandard wiring. Wiring must be done by qualified personnel to ensure compliance with all applicable installation codes and regulations.

Failure to follow these instructions will result in death or serious injury.

⚠ WARNING

EXPLOSION AND FIRE HAZARD

- Charge only properly rated (such as 24 V) lead-acid (GEL, AGM, Flooded, or lead-calcium) rechargeable batteries because other battery types may explode.
- Do not work in the vicinity of lead-acid batteries. Batteries generate explosive gases during normal operation. See note #1.
- Do not install and/or operate in compartments containing flammable materials or in locations that require ignition-protected equipment. See notes #2 and #3.

Failure to follow these instructions can result in death or serious injury.

NOTES:

1. Follow these instructions and those published by the battery manufacturer and the manufacturer of any equipment you intend to use in the vicinity of the battery. Review cautionary markings on these products.
2. This inverter/charger contains components which tend to produce arcs or sparks.
3. Locations include any space containing gasoline-powered machinery like a generator, fuel tanks, as well as joints, fittings, or other connections between components of the fuel system.

⚠ CAUTION

FIRE AND BURN HAZARD

Do not cover or obstruct the air intake vent openings and/or install in a zero-clearance compartment.

Failure to follow these instructions can result in moderate or minor injury.

Precautions When Working With Batteries

Important: Battery work and maintenance must be done or supervised by qualified personnel knowledgeable about batteries to ensure compliance with battery handling and maintenance safety precautions.

⚠WARNING

ENERGY AND FIRE HAZARD

- Always wear proper, non-absorbent gloves, complete eye protection, and clothing protection.
- Remove all personal metal items, like rings, bracelets, and watches when working with batteries. See CAUTION below.
- Never smoke or allow a spark or flame near batteries.

Failure to follow these instructions can result in death or serious injury.

⚠CAUTION

BURN HAZARD

Batteries can produce a short circuit current high enough to weld a ring or metal bracelet or the like to the battery terminal, causing a severe burn.

Failure to follow these instructions can result in moderate or minor injury.

⚠CAUTION

ELECTRIC SHOCK HAZARD

- Determine if the battery is inadvertently grounded. If inadvertently grounded, remove the source from ground.
- Avoid contact with any part of a grounded battery.
- Remove ground during installation and maintenance.

Failure to follow these instructions can result in moderate or minor injury.

⚠CAUTION

CHEMICAL HAZARD

- Never allow battery acid to drip when reading specific gravity or filling battery.
- Make sure the area around the battery is well ventilated.
- Make sure the voltage of the batteries matches the output voltage of the inverter/charger.
- Study and follow all of the battery manufacturer's specific precautions, such as removing or not removing cell caps while charging, whether equalization is acceptable for your battery, and recommended rates of charge.

Failure to follow these instructions can result in moderate or minor injury.

NOTICE

RISK OF INVERTER/CHARGER DAMAGE

Never place the Conext SW Inverter/Charger unit directly above batteries; gases from a battery will corrode and damage the inverter/charger.

Failure to follow these instructions can result in damage to equipment.

Regulatory

The Conext SW Inverter/Charger is certified to appropriate US and Canadian standards. For more information see “Regulatory Approvals” under Specifications.

The Conext SW Inverter/Charger is intended to be used for off-grid, backup, solar, and hybrid applications.

It is not intended for other applications as it may not comply with the additional safety code requirements needed for those other applications. See “Limitations On Use” below.

⚠WARNING

LIMITATIONS ON USE

Do not use in connection with life support systems or other medical equipment.

Failure to follow these instructions can result in death or serious injury.

FCC Information to the User

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications.

However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

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1 Introduction

The following topics will be covered in this chapter.

- Material List
- Key Features
- Basic Protection Features

Materials List

Congratulations on your purchase of the Conext SW Inverter/Charger (called Conext SW). The Conext SW has been designed to give you premium true sine wave power, ease of use, and outstanding reliability for your off-grid and power backup applications.

The Conext SW ships with the following items:

- One Conext SW unit
- One set of owner's and installation guides
- One Battery Temperature Sensor (BTS)
- Two Xanbus network terminators
- Two sets of 5/16"-18 nuts and washers for the DC terminals,
- Two DC terminal covers (red and black) with two sets of #6-32 screws
- One Installation bracket with one set of M6 nuts for mounting (not shown)

NOTE: If any of the supplied accessories are missing, contact customer service for replacement. For code-compliant installations in Canada and USA, the DC Switch Gear accessory is required. See the Installation Guide for more information.

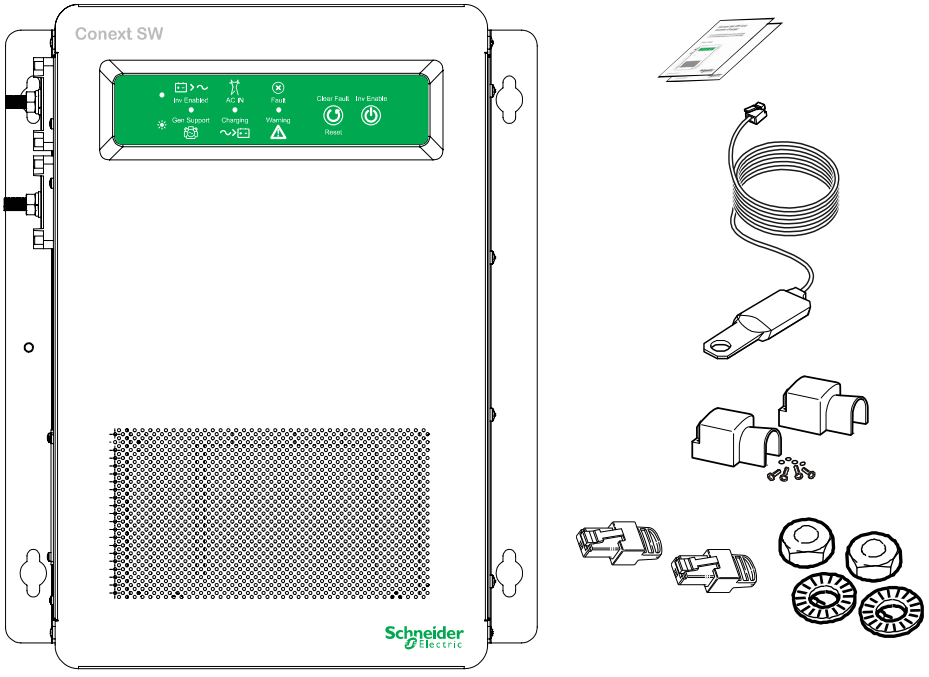


Figure 1-1 Materials List

Key Features

The Conext SW Inverter/Charger is a true sine wave inverter/charger that can be used for off-grid, backup, solar, and hybrid applications. The Conext SW Inverter/Chargers are designed to operate with a wide variety of generators and are capable of operating in parallel with a generator for short durations to assist with starting large loads. The Conext SW is a convenient combination of an inverter, multi-stage battery charger, and transfer switch in one electronic device.

The Conext SW Inverter/Charger's key features are:

- **True Sine Wave output** - as an inverter, the Conext SW provides true sine wave power for your microwave, entertainment system, computer, and other loads. This power is identical to the AC source provided from the utility grid (power company).
  Some of the benefits of high efficiency true sine wave power include consistent cooking in your microwave, handling of sensitive loads such as your TV set, dimmer switches, and appliances with speed controls.
- **Multiple unit configuration** - the Conext SW Inverter/Charger has a highly versatile platform capable of parallel multiple unit configuration[1] to increase power levels.
- **High surge capacity** - the Conext SW Inverter/Charger has a surge rating that is twice the maximum continuous output power rating to start difficult loads like well pumps, refrigerators, or A/C compressors. See "Inverter Specifications" on page 6–2.
- **Power factor correction** - Power factor-corrected (PFC) input minimizes AC input current required for charging, increasing AC pass-through capacity.
- **Multi-stage charging** - the Conext SW Inverter/Charger has a high output, multi-stage charging capability that minimizes charging time.
- **Adjustable frequency** - the Conext SW Inverter/Charger is capable of operating from a 50Hz and 60Hz power source by extending the AC qualification frequency range. See "AC Settings" on page 4–20.
- **Temperature-controlled, variable-speed internal cooling fans** - the fans turn on when the internal temperature reaches 113 °F (45 °C) and reaches maximum speed at 158 °F (70 °C). The fan turns off when the internal temperature falls to 104 °F (40 °C).
- **Xanbus-enabled** - the Conext SW Inverter/Charger is also Xanbus-enabled which allows network compatibility and communication with other Xanbus-enabled devices. See more information under "Xanbus System" on page 2–2.

1.In Conext SW Inverter/Chargers, multiple unit configuration (installation) is limited to two units - one master unit and one slave unit.

Key Features Explained

Built-in Charge Formulas

For the unit to perform at the highest level, the batteries must be charged correctly. The Conext SW has optimized algorithms for flooded, gel, and AGM batteries.

Battery Temperature Sensor

Since battery temperature is a key factor in correct charging, the charging formula must be adjusted (automatically and in real time) according to the actual battery temperature to ensure that batteries are fully charged, but not overcharged. For this reason, a battery temperature sensor (BTS) is included with the Conext SW that works with a temperature-compensated charge formula.

Manual Equalization

Over a period of time, the cells in a flooded battery can develop uneven chemical states. This can result in a weak (undercharged) cell which, in turn, can reduce the overall capacity of the battery. To improve the life and performance of a non-sealed, flooded battery, the Conext SW's multi-stage charging cycle includes a manual equalize mode that can be used, if recommended by the battery manufacturer.

Dead Battery Charging

Another feature that the Conext SW includes is dead battery charging. The Conext SW—unlike many chargers—has the ability to recharge batteries even if the battery voltage is very low, i.e., as low as 12 volts.

Load Management

The Conext SW has a built-in transfer relay that connects your inverter output or AC input from the AC generator to your loads. Because the usual AC power sources such as small generators often have limited current availability, having the capability to manage your AC loads is extremely valuable. The Conext SW provides a number of features to facilitate this.

- The charger is power factor corrected to use AC current as efficiently as possible. Minimizing the AC current used by the charger means more current is available for your AC loads.
- The Conext SW has a power share feature which prioritizes your AC loads by reducing the charge current and maintaining the total input current to less than the breaker setting.

Occasionally, AC input sources have low voltage. To avoid loading these weak sources any further, the charger automatically reduces its AC current draw as the AC voltage approaches the minimum acceptable level.

Multiple Unit Configuration

See “Multiple Unit Configuration” on page 1–5.

Generator Support

See “Generator Support” on page 1–5.

Multiple Unit Configuration

Conext SW Inverter/Charger supports multiple unit configuration to increase capacity. Conext SW multiple unit configuration is limited to one master unit and one slave unit.

Parallel Multiple Unit Configuration

Multiple unit configuration allows two inverter/chargers to operate in parallel thereby doubling the capacity in inverter mode. The two inverters communicate over the Xanbus network and intelligently share the load and balance the load between the units. The Master Conext SW unit synchronizes operation, through the Xanbus network, between itself and the other unit. When AC loads are present, the two units produce power, effectively sharing the load. When Search mode is enabled, only the Master unit produces the AC output.

Multiple Unit Charging

Two Conext SW Inverter/Chargers synchronize charging stages to ensure efficient charging of the battery bank. When a one unit transitions from bulk to absorption so does the other unit. In absorption, the two units must complete the absorption stage before transitioning to the next stage. Note that the two units do not load share when charging except during the bulk stage. The Conext SW units stop sharing charge current just before completing the bulk stage. The units do not share charge current during the absorption and float stages.

Each unit charges batteries based on the Max Charge Rate setting and active internal (temperature-based) deratings.

If equalization is enabled on one or more devices capable of equalization charging, only those devices perform an equalize cycle after absorption. Other devices transition to float (if three-stage charging is selected) or transition to AC pass-through (if two-stage charging is selected).

Generator Support

The Conext SW inverter/chargers can operate in tandem with an AC generator to temporarily assist power loads with large start-up demands such as air conditioners and water pumps. An Automatic Generator Start device (AGS) must be installed in the system in order for this feature to work.

When this mode is enabled and generator capacity defined, the inverter will come on-line and assist the generator when the generator reaches its capacity. The battery bank must be well charged in order for the inverter to engage this mode. For more details, see “Gen Support Settings” on page 4–22.

Basic Protection Features

The Conext SW has the following protection features:

- Over temperature shutdown for critical components such as the transformer and the power board
- Battery temperature sensor (BTS) failure/battery temperature out-of-range fault protection
- DC output over voltage protection during charge mode
- AC output overload and short circuit protection during invert mode
- AC backfeed[1] protection

The Battery Temperature Sensor (BTS) provides these protection features:

- battery over temperature charging protection preventing battery charging at 140 °F (60 °C) or higher, and
- charging voltage compensation based on the temperature of the battery the BTS is connected to.

1.An AC backfeed error occurs when the AC output of the inverter/charger is connected or routed back to the inverter/charger's AC input terminal or if the an AC internal transfer relay error is detected.

2 Components and Mechanical Features

The following topics will be covered in this chapter.

- System Components
- Mechanical Features

System Components

The Conext SW uses Xanbus, a network communications protocol developed to send Conext SW's operational settings and status to other Xanbus-enabled devices. You can configure and monitor the Conext SW and every Xanbus-enabled device in the system using an optional System Control Panel (SCP).

Another component is the optional Automatic Generator Start (AGS) which allows operation with a wide range of generators, supported through a dedicated generator input. Simply, the AGS automatically starts and stops your generator.

Solar charge controllers allow renewable energy collected from the sun to charge batteries as might be the case in an off-grid application of Conext SW. The charge controllers form part of the Xanbus network.

See "Xanbus-enabled Products and Other Accessories" on page 2–3 for part numbers.

Xanbus System

The Xanbus system includes the Conext SW and other Xanbus-enabled devices. The Conext SW is the device in a Xanbus system that typically provides network power—500 mA at 12 VDC. All of the Xanbus-enabled devices, such as the Conext SW, the SCP, and the AGS are able to communicate their settings and activity to each other.

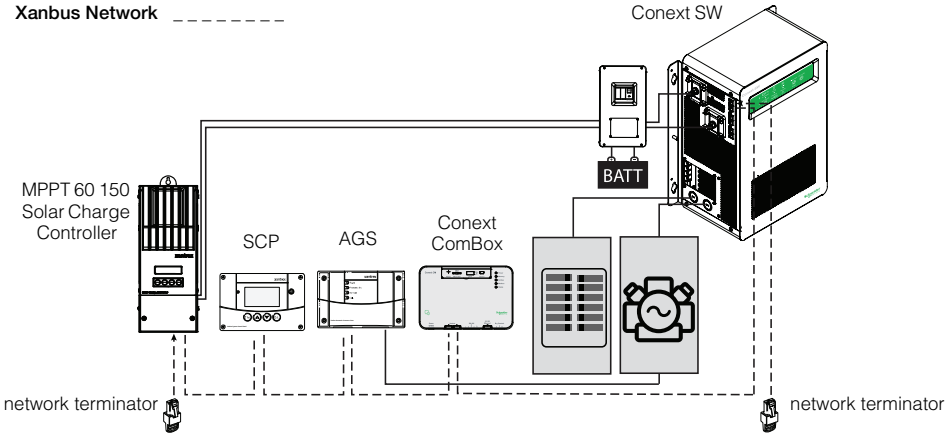


Figure 2-1 Xanbus System Components

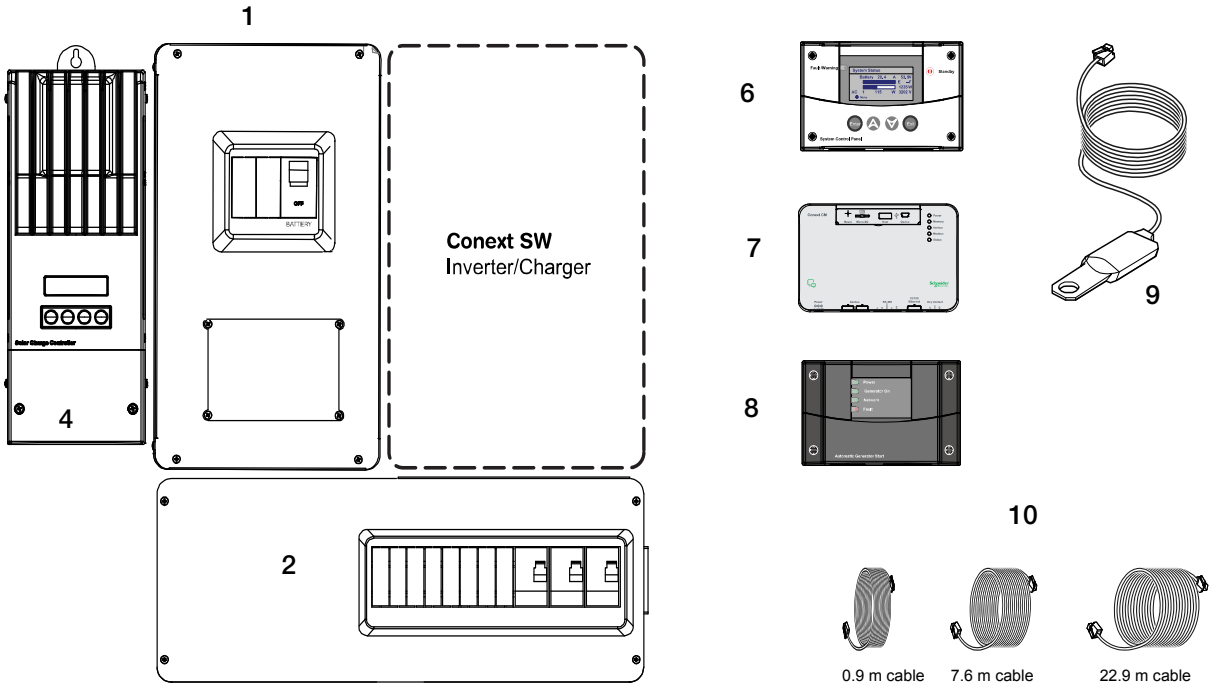
xanbus™
ENABLED

The Xanbus-enabled designation (see left) means that this product works on a Xanbus network. Xanbus-enabled products are:

- Simple to operate and routine tasks are automated.
- Controlled by software that eliminates analog signalling errors.
- Less susceptible to interference and line loss.
- Upgradable through new software releases.

For detailed instructions and a complete list of Xanbus-enabled devices, visit www.schneider-electric.com.

Xanbus-enabled Products and Other Accessories



	Product/Accessory (Shown above)	Product Number/s
1	Conext SW DC Switch Gear*	865-1016*
2	Conext SW AC Switch Gear	865-1017
3	Stacking Kit (not shown)	865-1019
4	MPPT 60 150 Solar Charge Controller	865-1030-1
	MPPT 80 600 Solar Charge Controller (not shown)	865-1032
5	Conext SW On/Off Remote Switch (not shown)	865-1052
6	System Control Panel (SCP)	865-1050
7	Conext CM (not shown)	865-1058
8	Automatic Generator Start (AGS)	865-1060
9	Battery Temperature Sensor (BTS)	808-0232-02
10	3-ft network cable (0.9 m)	809-0935
	25-ft network cable (7.6 m)	809-0940
	75-ft network cable (22.9 m)	809-0942

* required accessory for code-compliant installation in Canada and USA.

Conext SW Inverter/Charger Mechanical Features

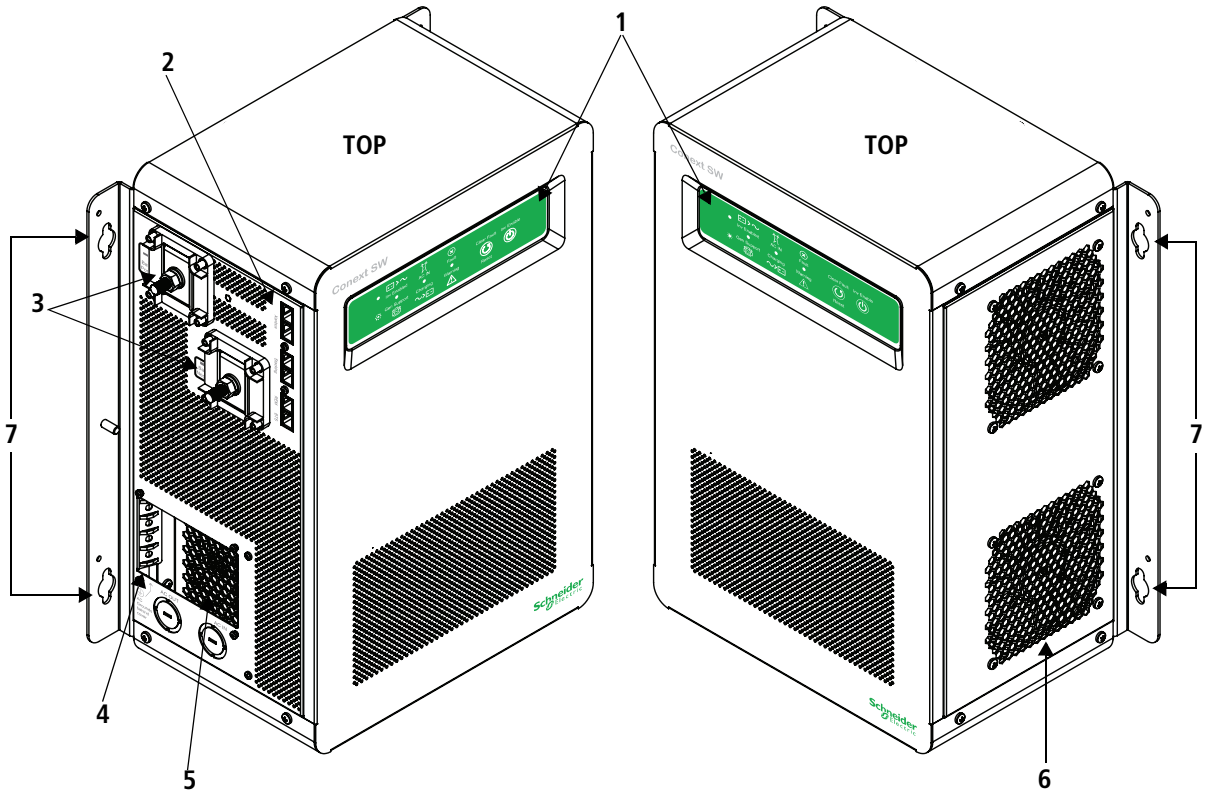


Figure 2-2 Conext SW Front and Side Panels

Conext SW Front and Side Panels

Before you begin to operate the Conext SW, review the front panel features shown in Figure 2-3 and described in the next table. A detailed view of the lights and buttons on the front panel is also shown.

Item	Description
1	Front Panel contains the Inv Enable and Clear Fault | Reset buttons, as well as various LEDs (status indicator lights). See “Front Panel Buttons and Status LEDs” on page 2–5.
2	Network and communications ports. See “AC and DC Terminals, Network and Communication Ports Panel” on page 2–6.
3	DC battery terminals. See “AC and DC Terminals, Network and Communication Ports Panel” on page 2–6.

Item	Description
4	AC Ground terminals. See “AC and DC Terminals, Network and Communication Ports Panel” on page 2–6.
5	AC line terminals. See “AC and DC Terminals, Network and Communication Ports Panel” on page 2–6.
6	Two variable-speed cooling fans maintain a cool internal temperature of critical components. The two fans control airflow through the transformer and power compartments of the unit. Ensure at least 6" (152 mm) of clearance for proper ventilation.
7	Mounting holes for permanent installation.

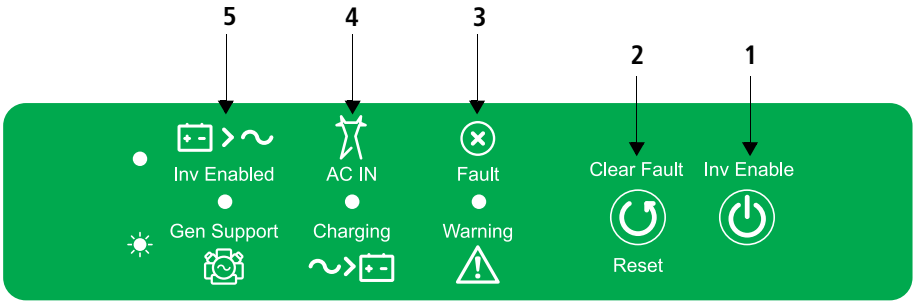


Figure 2-3 Front Panel Buttons and Status LEDs

Item	Description
1	**Inv Enable** button is used to enable and disable inverter mode. “Enabled” is different from the inverter being “on”. When enabled, the inverter can be on or off. When disabled, the inverter is always off.
2	**Clear Fault** | **Reset** button is used to clear any fault detections if pressed momentarily. If held down for more than three seconds, the unit will reset (reboot) itself.
3	**Fault** | **Warning** LED illuminates steadily if a fault is detected (a fault detection condition) and flashes intermittently when a warning condition is active.
4	When AC is present and qualified, the **AC IN** LED will illuminate steadily indicating also that AC is passing through. **Charging** LED flashes intermittently when the Conext SW is in charge mode and is producing DC output to charge your batteries.
5	The **Inv Enabled** LED illuminates steadily when invert mode is enabled. If AC is present and invert mode is enabled, this LED remains illuminated even though AC power is being passed through. **Gen Support** LED flashes intermittently when the inverter is in generator support mode and is assisting the generator.

Conext SW AC/DC/Ports Side Panel

⚠ DANGER

ELECTRICAL SHOCK AND FIRE HAZARD

Installation must be done by qualified personnel to ensure compliance with all applicable installation and electrical codes and regulations. Instructions for installing the Conext SW are provided in a separate installation guide for use by qualified installers only.

Failure to follow these instructions will result in death or serious injury.

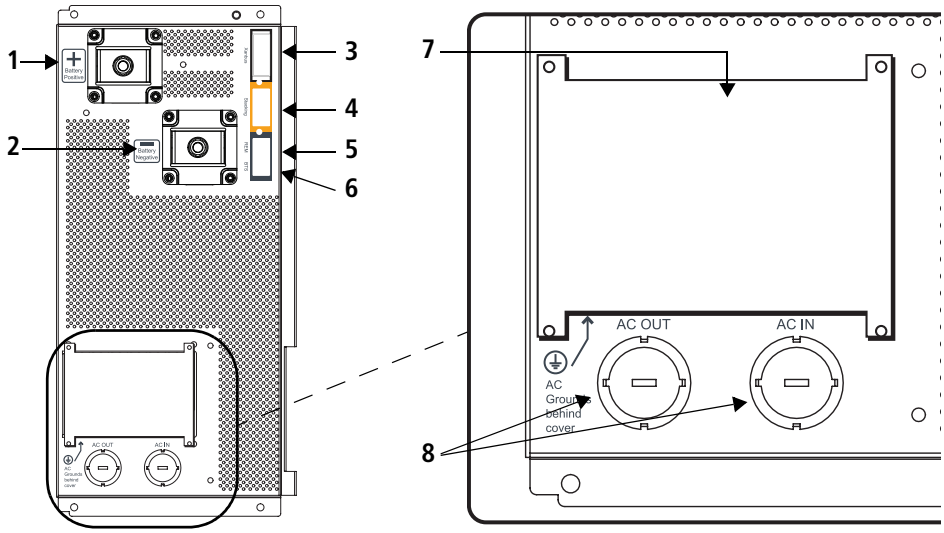


Figure 2-4 AC and DC Terminals, Network and Communication Ports Panel

Item	Description
1	**Battery Positive (+)** DC terminal connects to the positive battery cable (red).
2	**Battery Negative (–)** DC terminal connects to the negative battery cable (black).
3	**XANBUS** interface ports are used to connect Xanbus-enabled devices including the optional SCP and AGS.
4	**STACKING** port. Feature not available in these models.
5	Remote (**REM**) port provides connection for the on/off remote switch.
6	Battery temperature sensor (**BTS**) port provides connection for the battery temperature sensor (supplied).
7	AC input/output wiring compartment access panel with the compartment cover
8	AC knockouts

3 Operation

The following topics will be covered in this chapter.

- Start Up Behavior
- Conext SW Front Panel
- Conext SW with the SCP – System Control Panel
- Battery Charging Reference

Start Up Behavior

When the Conext SW is powered up (energized) or has been reset (using the Reset button on the front panel), all of the front panel LEDs illuminate and remain on for a minimum of five seconds. During this interval, the fans also turn on as the unit executes internal diagnostics.

The Conext SW inverter function is initially disabled (meaning the unit will not invert even if there is sufficient battery voltage) every time the Conext SW is energized for the first time. After being energized, the **Inv Enable** button on the front panel can be used to enable or disable the inverter. A separate control device called a System Control Panel (or SCP) may also be used to enable or disable the inverter. However, the unit will remember its inverter function setting in succeeding operations. This means that if the inverter function is left enabled before a reset or power down-power up cycle, the inverter function will remain enabled.

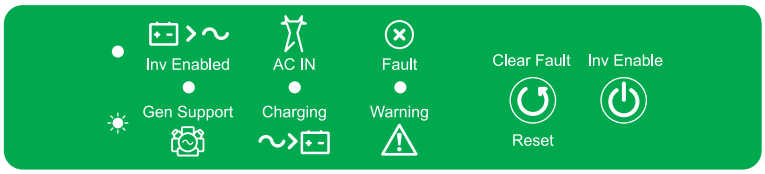
When a function is enabled, it generally means that it is “standing by” and other conditions may have to be met before the function is utilized. For example, the charger function on the Conext SW may be enabled, but it will not charge unless qualified AC power is present. Similarly, even if the inverter function is enabled, inverting may not occur if the batteries cannot supply the energy required for the loads.

IMPORTANT: Review the “Important Safety Instructions” on page v before operating the inverter/charger.

Inverter Operation Using the Front Panel

IMPORTANT: Review the “Important Safety Instructions” on page v before operating the inverter/charger.

Once the inverter/charger is installed, you can operate it in invert mode. The steps below will test the unit for normal operation using the front panel.



To test the inverter using the front panel:

1. Press the Inv Enable button on the Conext SW on the front panel. The Inv Enabled ● LED illuminates.
2. Turn on the main AC breaker or AC disconnect to supply AC input power to the inverter.

NOTE: The Inv Enabled ● LED will remain lit. However, AC will continue to be passed through (also called AC bypass) to the loads until conditions exist that cause AC to be disqualified, in which case the unit will start inverting. The AC IN ● LED should also illuminate. The Charging ☼ LED will start flashing to indicate that the unit is charging the battery. The charger automatically starts when qualified AC power is connected and when the battery is not fully charged.

3. Turn off the main AC breaker or AC disconnect to stop AC input power from going into the inverter.
4. Place a load on the inverter. This also usually means turning on the inverter’s AC distribution sub-panel’s breaker switch.
5. Connect a load such as a lamp into an outlet connected to the sub-panel circuit and turn it on. The lamp lights up.
6. Repeat step #2. The lamp will remain lit up.
7. Repeat step #3. The inverter/charger should invert immediately. The transfer relay will make a clicking sound and the Inv Enabled ● LED will illuminate. The lamp should remain lit up. If any part of this test does not happen correctly, determine the cause before continuing to use the unit.
8. Monitor the Conext SW front panel.
   The indicator LEDs on the front panel show you the operating status of the Conext SW. A description of the LEDs is provided in Table 3-1.
   If none of the front panel LEDs are on, see “General Troubleshooting Guidelines” on page 5–2.

Table 3-1 Front Panel LEDs

Icon	LED	Status	Action (or Status Item)
Inv Enabled	Steady Green ●	If generator or grid AC is unavailable and operating conditions are met, the Conext SW will produce AC voltage to power loads.	You can run your appliances from the inverter.
Gen Support	Flashing Green ☀	The inverter is assisting a generator in powering loads.	You can run your appliances from the inverter.
AC IN	Steady Green ●	When the Conext SW is connected to a generator or grid and is producing qualified AC, the AC IN light illuminates.	You can run your appliances using passed-through AC.
Charging	Flashing Green ☀	Conext SW is connected to a qualified AC source, is charging and passing-through power to AC loads.	Your battery bank is being replenished and AC loads are receiving power from a qualified AC source.
Fault	Steady Red ●	A fault has been detected on the network.	Investigate and clear the fault detection condition.
Warning	Flashing Red ☀	A warning is detected.	Investigate by examining warning logs on SCP.

Fault Detections and Warnings A fault detection condition affects the operation of the unit. A fault detection sometimes requires user intervention by clearing the condition using the Clear Fault button on the inverter/charger's front panel. Press the button once to clear the condition. See "Troubleshooting" on page 5–1 for information on clearing fault detections from the SCP.

A warning alerts you to a condition that could possibly affect operation of the unit. A warning usually precedes a fault detection condition.

IMPORTANT: If you are having problems with any of your loads, refer to "Inverter Applications" on page 5–3.

Operating Limits for Inverter Operation

Temperature The Conext SW series of inverter/chargers will operate at rated power continuously at 77 °F (25 °C) with some models capable of continuous operation at much higher ambient temperature. However, the continuous power rating at elevated ambient temperature may differ between models. See “Environmental Specifications” on page 6–5 for full details. In higher ambient temperatures, if the loads draw full power for an extended period of time, the unit may shut down to protect itself against overheating.

Surge Power The Conext SW series of inverter chargers feature a surge rating of 200% of rated power for five seconds at 77 °F (25 °C). See “Inverter Specifications” on page 6–2 for full details. Operating the inverter/charger in conditions outside of normal rated power and temperature limits, however, will result in thermal shutdown and/or significantly decreased performance. See “Inverter Specifications” on page 6–2 for information on continuous operation at higher than rated power.

Difficulty on starting loads The inverter/charger should be able to operate all AC loads rated at or below its power rating. Some high horsepower induction motors used in pumps and other motor-operated equipment require very high surge currents to start, and the inverter/charger may have difficulty starting these loads.

If you have problems starting certain loads, ensure that:

- The battery connections are tight and clean.
- The DC cabling is no longer than the recommended length. Refer to the *Conext SW Inverter/Charger Installation Guide* for this information.
- The AC wiring is of recommended size. Refer to the *Conext SW Inverter/Charger Installation Guide* for this information.
- The battery is of sufficient capacity and is fully charged.

Split-phase output during invert mode and AC bypass The Conext SW always yields a split-phase output when inverting and during AC bypass.

- A split-phase input through L1 and L2 yields a split-phase output of L1 and L2.
- Single-phase input through L1 yields a split-phase output of L1 and L2.
- A single-phase input through L2 does not produce any output. Only the input in Line 1 is capable of qualifying the AC coming from the power source.

Operating Limits for Charger Operation

By default, the maximum charger output current is the rated charger output current for the particular model. Using the SCP, you can reduce the total output if you change the maximum charge rate (**`Max Chg Rate`**) on the Conext SW Basic Settings menu or Charger Settings menu under Advanced Settings.

The charger can charge batteries when the AC input voltage line-to-neutral is within the minimum and maximum range of 95 to 135 VAC. They are the default minimum and maximum settings. The minimum range setting can be adjusted from 78 to 115 VAC and the maximum range setting from 125 to 140 VAC.

The charger can also be configured to accept and operate from a wide AC source frequency of 44–70 Hz. The default setting is 55 Hz for low frequency and 65 Hz for high frequency. This wide range allows the Conext SW to charge your batteries even when incoming AC voltage is less than the typical 60 Hz.

Power Share The Conext SW charger uses both split-phase lines AC INPUT L1 and L2 to charge the batteries at full capacity. However, if only AC INPUT L1 is used, charge capacity is reduced to 50%. Consequently, the Conext SW charger shares incoming power with AC loads on both split-phase lines with a current limit of 30 amps for charging and pass-through AC. However, when AC is qualified only on one line at AC INPUT L1, the current draw from that input is limited to 15 amps (SW 4024 120/240) and 13 amps (SW 2524 120/240) for charging and AC pass-through. The AC loads have priority, which means that the charger will reduce its output with large AC loads and increase the output again when the AC load decreases. The regulatory maximum for continuous AC loads is 80% of the breaker rating that the loads are connected to.

The Conext SW senses pass-through current going to the AC load. The difference between the pass-through (load) and 80% of the Power Share setting is the current that is available for charging the batteries.

For example, if the AC input of the Conext SW is from an AC panel with a 30-amp breaker, the Power Share setting on the SCP should be selected as 30-amp. Based on this, the charger will control the charge current so that the total current draw is equal to or less than 24 amps in this case. Should the load current be more than about 24 amps, the charger output will reduce to zero (0) amp, but the Conext SW will continue to supply the loads. The Conext SW will continue to pass-through power to the loads, even if the load current exceeds the Power Share setting. In this case, it will be up to the user to remove/disconnect loads if tripping the AC input breaker supplying the Conext SW is to be avoided.

Inverter/Charger Operation using the System Control Panel (SCP)

This section contains detailed information and procedures for using your Conext SW in conjunction with the SCP.

If you're using the SCP to operate or monitor the status of the unit, you may also refer to the *System Control Panel Owner's Guide*.

⚠WARNING

LIMITATIONS ON USE

Do not use in connection with life support systems or other medical equipment.

Failure to follow these instructions can result in death or serious injury.

The SCP provides operating, configuring, and monitoring capability for your Xanbus system.

The System Control Panel:

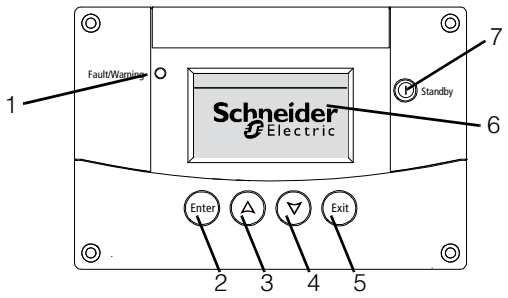
- Monitors activity throughout your power system.
- Displays the latest information about your inverter/charger, battery voltage level, battery charge output, and generator start and stop activity.
- Displays the settings for each Xanbus-enabled device in the system.
- Enables you to adjust the settings for each Xanbus-enabled device in the system.
- Preserves all of its settings if system power is interrupted. After power is restored, you don't have to reconfigure the SCP or any of the Xanbus-enabled devices connected to it.

The SCP provides remote configuration and monitoring capabilities for the Conext SW and other Xanbus-enabled devices in the power system. Please refer to the System Control Panel Owner's Guide for complete information on using the System Control Panel.

You can monitor Conext SW operation on the SCP using the:

- System Status screen (see page 3–10)
- Conext SW Home screen (see page 3–11)
- Conext SW Meters Menu (see page 3–15)

SCP Features



Feature	Description
1	Fault/Warning light indicates a device has a fault detection or warning condition and requires attention. The light flashes when a warning occurs and turns on steadily when a fault detection occurs.
2	Enter button confirms selection of a menu item or displays the next screen.
3	Up arrow button scrolls upward through screen text or increases a selected value.
4	Down arrow button scrolls downward through screen text or decreases a selected value.
5	Exit button cancels selection of a menu item or displays the previous screen.
6	Screen shows menus, settings, and system information.
7	Standby button disables inverting and charging on all Conext SW units in the system when pressed and held for one to two seconds. To enable inverting and charging, press and hold the Standby button again for one to two seconds.

Using the Standby Button

The Standby button has two functions, depending on how it is pressed. First, when only the Standby button is pressed, it can disable inverting and charging for all Conext SW units in the system. Second, when it is pressed simultaneously with the Exit button, this action puts the entire system into Standby mode.

Pressing the Standby button produces the same result as disabling “Invert” and “AC Charge” from the System Settings menu on the SCP. Pressing the Standby button momentarily affects only Conext SW units; it does not affect charge controller operation. After disabling inverting and charging with the Standby button, the system continues to pass AC input through to the loads.

Pressing the Exit and Standby buttons at the same time puts the entire Xanbus network system (including charge controllers) into Standby mode. In Standby mode, the Conext SW stops passing AC input through to the loads.

After the keypress command to enter Standby mode, the AGS – Automatic Generator Start (if installed) shuts down the generator (if it is running) after a cool-down cycle.

SCP Navigation

This section describes the different types of screens and menus on the SCP. To monitor Conext SW operation and change settings, it is helpful to know how to locate these screens and menus.

Startup Screen

This screen is shown when the SCP first receives power from the Xanbus network.

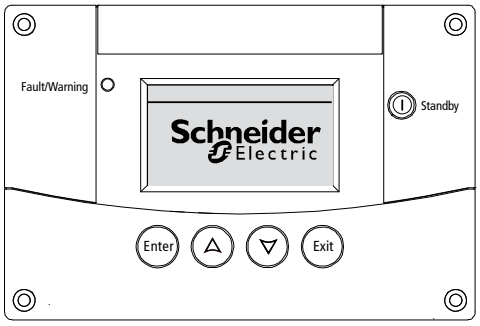


Figure 3-1 Startup Screen

Viewing the SCP Home Screens

The top level screens on the SCP are the Startup screen, the System Status screen, and the Device Home screens. After power is applied and the Startup screen appears, the SCP displays the System Status screen. You can view the Device Home screens for the Conext SW and other devices in the system by pressing the up and down arrows, as shown in Figure 3-2.

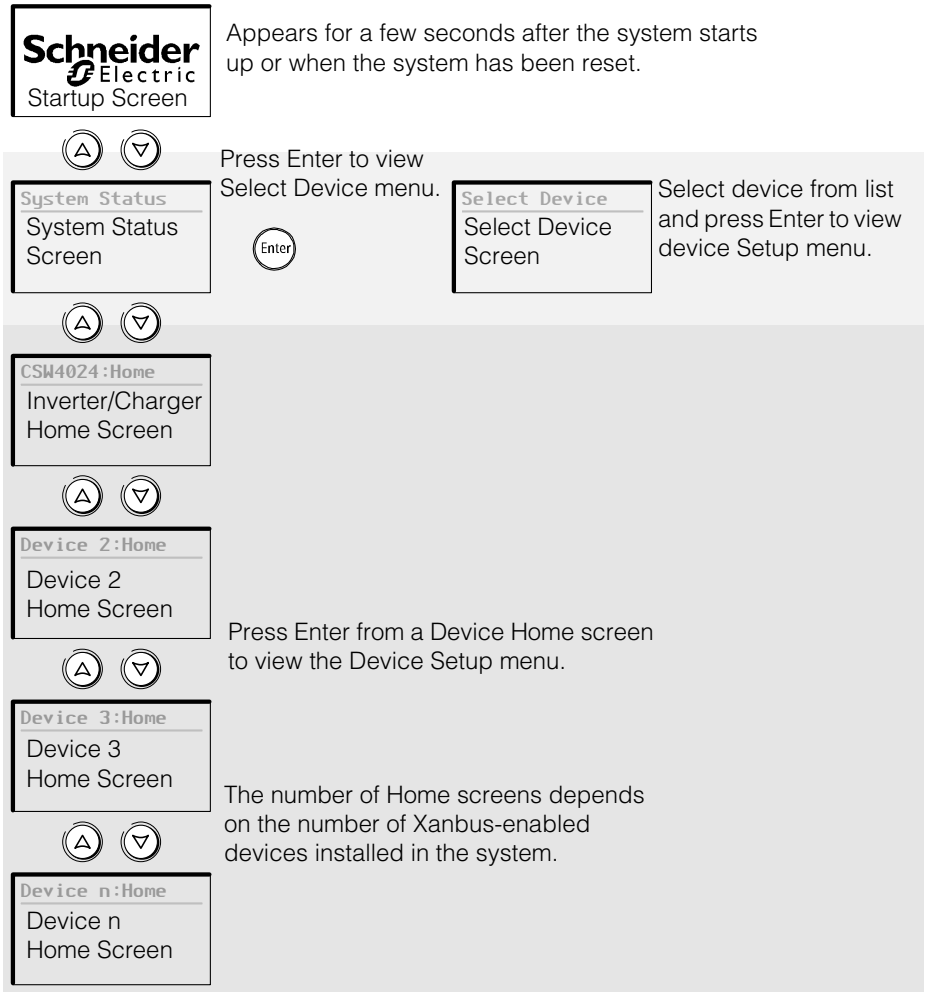

Schneider Electric
Startup Screen
Appears for a few seconds after the system starts up or when the system has been reset.
Press Enter to view Select Device menu.
System Status
System Status Screen
Enter
Select Device
Select Device Screen
Select device from list and press Enter to view device Setup menu.
CSW4024:Home
Inverter/Charger Home Screen
Device 2:Home
Device 2 Home Screen
Press Enter from a Device Home screen to view the Device Setup menu.
Device 3:Home
Device 3 Home Screen
The number of Home screens depends on the number of Xanbus-enabled devices installed in the system.
Device n:Home
Device n Home Screen

Figure 3-2 SCP Top Level Screens

System Status Screen

The **System Status** screen appears after the Startup screen. The **System Status** screen displays aggregated status information for the entire power system. For example, a single system may have three Xanbus network-connected Conext SWs, two MPPT Solar Charge Controllers, one AGS–Automatic Generator Start module, and one SCP–System Control Panel all connected to a single battery bank and a single AC generator.

The System Status screen always features a “Menu” arrow pointing to the Enter button. Pressing Enter takes you to the Select Device menu.

IMPORTANT: If you are uncertain which SCP screen or menu you are viewing, you can always return to the starting point—the System Status screen—by pressing Exit repeatedly until the screens stop changing.

The System Status screen displays:

- Qualified AC source (if applicable) and total power to and from the source
- Battery capacity and voltage level
- Net battery input or output current
- Total inverter loading
- Time and date

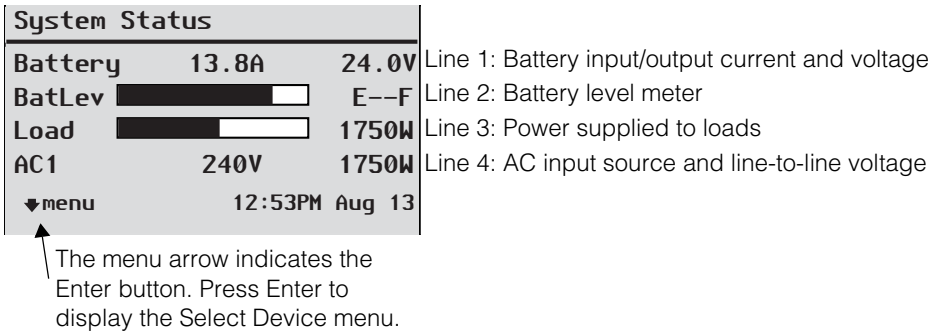

System Status
Battery 13.8A 24.0V
BatLev E--F
Load 1750W
AC1 240V 1750W
menu 12:53PM Aug 13
Line 1: Battery input/output current and voltage
Line 2: Battery level meter
Line 3: Power supplied to loads
Line 4: AC input source and line-to-line voltage
The menu arrow indicates the Enter button. Press Enter to display the Select Device menu.

Figure 3-3 System Status Screen

Conext SW Home Screen

The Conext SW **Home** screen is the first of the Device **Home** screens. Each Conext SW installed in the system has its own **Home** screen. The screen appearance varies with the status of each inverter/charger. The Conext SW **Home** screen displays real-time operating data specific to the Conext SW. The Conext SW status changes according to the states described in Table 3-2 on page 3–12.

To display the Conext SW Home screen:

◆ While viewing the **System Status** screen, press the down arrow key.

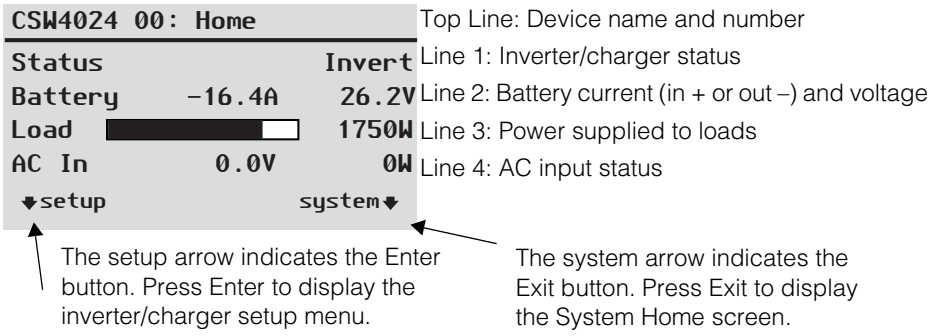

CSW4024 00: Home
Status Invert
Battery -16.4A 26.2V
Load 1750W
AC In 0.0V 0W
setup system
Top Line: Device name and number
Line 1: Inverter/charger status
Line 2: Battery current (in + or out –) and voltage
Line 3: Power supplied to loads
Line 4: AC input status
The setup arrow indicates the Enter button. Press Enter to display the inverter/charger setup menu.
The system arrow indicates the Exit button. Press Exit to display the System Home screen.

Figure 3-4 Conext SW Home Screen

Pressing the down arrow button from the Conext SW Home screen displays the Home screens for other Conext SW units and other Xanbus-enabled devices in the system.

Table 3-2 Conext SW Home Screen States

Conext SW Status	Displayed When...
Invert	The Conext SW is supplying power to loads by inverting power from the batteries. AC input from the AC generator or grid is absent or out of nominal range.
Qualifying AC	The Conext SW is determining if AC input from the AC generator or grid is within a usable voltage and frequency range. It is also displayed when the Conext SW is awaiting application of AC power or a command to enable invert mode.
GenSupport	There is AC input from the generator, and the Conext SW is supporting the generator by supplying additional power to the critical loads. The Conext SW supports the generator when the AC load current drawn exceeds the GenSup Amps setting for 1 to 2 seconds. The Conext SW uses stored DC capacity to load share with the generator until the total AC load current (generator plus inverter output) drops by 2 amps plus 10 per cent of the GenSup Amps setting for 6 seconds. For example, if GenSup Amps is set to 10 amps, the inverter starts to support when the load exceeds 10 amps for 2 seconds and stops when it drops more than 3 amps below the GenSup Amps setting, or 7 amps (2 amps plus 10 per cent of 10 amps = 3 amps). The system can enter this state if the battery voltage is above the Low Batt Cut Out setting and Gen Support is enabled. See “Gen Support Settings” on page 4–22.
Bulk	The Conext SW is bulk-charging the batteries from qualified AC input from an AC generator or grid. AC input is also passed through to the load while bulk-charging.
Absorption	The Conext SW is absorption-charging the batteries from qualified AC input from an AC generator or grid. AC input is also passed through to the load while absorption-charging.
ABS Finish	The Conext SW has completed the absorption stage and is waiting for other Conext SWs in the system to complete absorption. This status can occur only when there is another Conext SW also charging the battery.
Equalize	Equalization has been turned on, and the Conext SW is equalizing the batteries after completing a full charge cycle.

Table 3-2 Conext SW Home Screen States

Conext SW Status	Displayed When...
Float	The Conext SW is float-charging the batteries from qualified AC input from an AC generator or grid. The Conext SW is set for three-stage charging. AC input is also passed through to the load while float-charging.
NoFloat	The Conext SW finishes the absorption stage and the Conext SW is set for two-stage charging.
ACGood	The Conext SW has determined that AC input is within a usable voltage and frequency range.
LdSenseActv	Search Mode is enabled and the Conext SW is standing by waiting to begin inverting. See “Using Search Mode” on page 4–11.

Viewing Other Screens

This section describes the next level of screens and menus on the SCP.

Select Device Menu

The **Select Device** menu displays a list of Xanbus-enabled devices in the system, including the Conext SW and the SCP. The **Select Device** menu is where you can access the Setup menus for each device in the system. The length of the **Select Device** menu depends on how many Xanbus-enabled devices are installed.

The **Select Device** menu also contains the **Clock** menu (where the time and date are set) and the **System Settings** menu (where system-level settings can be configured). The **System Settings**, **SCP**, and **Clock** menus are always available from the **Select Device** menu, regardless of the number of Xanbus-enabled devices installed.

To display the Select Device menu:

- While viewing the **System Status** screen, press Enter.

Device Setup Menus

Device Setup menus display status information (on the Meters screen) and changeable settings. Changeable settings are identified by the square brackets [ ] around values in the right-hand column.

To display the Setup menu for a device:

- Highlight the device name on the **Select Device** menu by using the up and down arrow buttons, and then press Enter on the highlighted device.

  -Or-

  From the **Home** screen menu, simply press Enter.

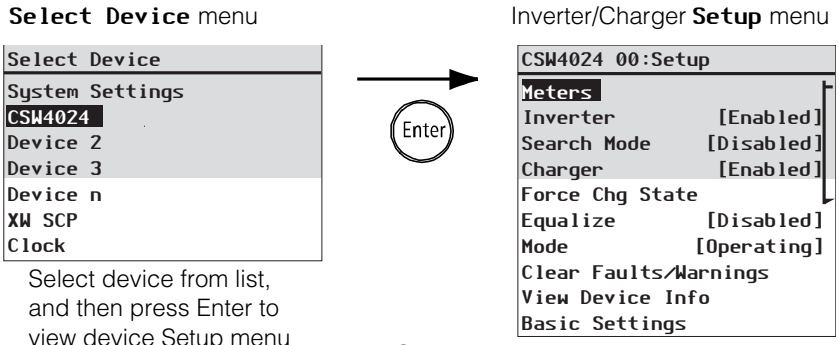


Figure 3-5 Selecting a Device Setup Menu

When a particular device is selected, it is possible to change its settings and operate the device using the Device Setup menu screen. For more information on how to operate the Conext SW, see “Changing Operational Settings” on page 3–16.

Meters Screen

The Meters screen displays total system power production, generator voltage and current status, and load voltage and current status.

To view the Meters screen:

- On the Conext SW **Setup** menu highlight **Meters**, and then press Enter.

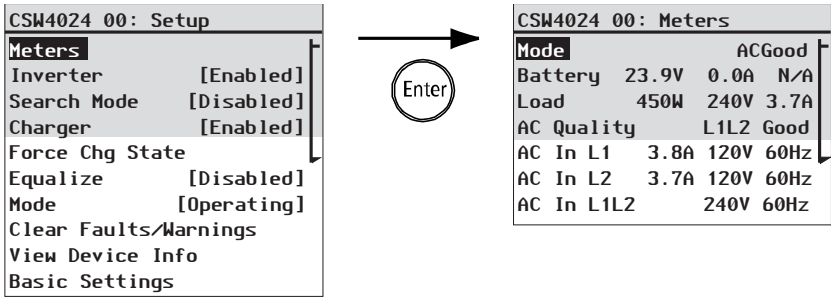


Figure 3-6 Viewing the Meters Screen

Table 3-3 Meters Screen

Screen Item	Description
Mode	Operating state of the Conext SW. See also "Conext SW Home Screen States" on page 3–12.
Battery	Displays battery voltage, charging current and battery temperature. The battery temperature comes from the BTS, connected to the Conext SW. If the BTS is not installed, Battery shows as N/A (not available).
Load	Displays power consumption (watts), voltage, and current (amps) supplied to the AC loads.
AC Quality	Displays the quality of the AC input. A good quality AC input generally means that it falls between the high and low voltage range set in "AC Settings" on page 4–20.
AC In L1	AC input current, voltage, and frequency connected to the Conext SW AC INPUT L1 terminal.
AC In L2	AC input current, voltage, and frequency connected to the Conext SW AC INPUT L2 terminal.
AC In L1L2	Combined L1 and L2 input voltage and frequency.

Changing Operational Settings

The following table shows the various settings you can change to effectively operate the Conext SW inverter/charger.

To navigate to the Conext SW Setup menu:

1. From the **System Status** screen (see 1A), press Enter to view the **Select Device** menu. Go to step 2.

   Or

   From the Conext SW **Home** screen (see1B), press Enter. The Conext SW **Setup** menu appears.
2. Highlight the Conext SW device name, and then press Enter.

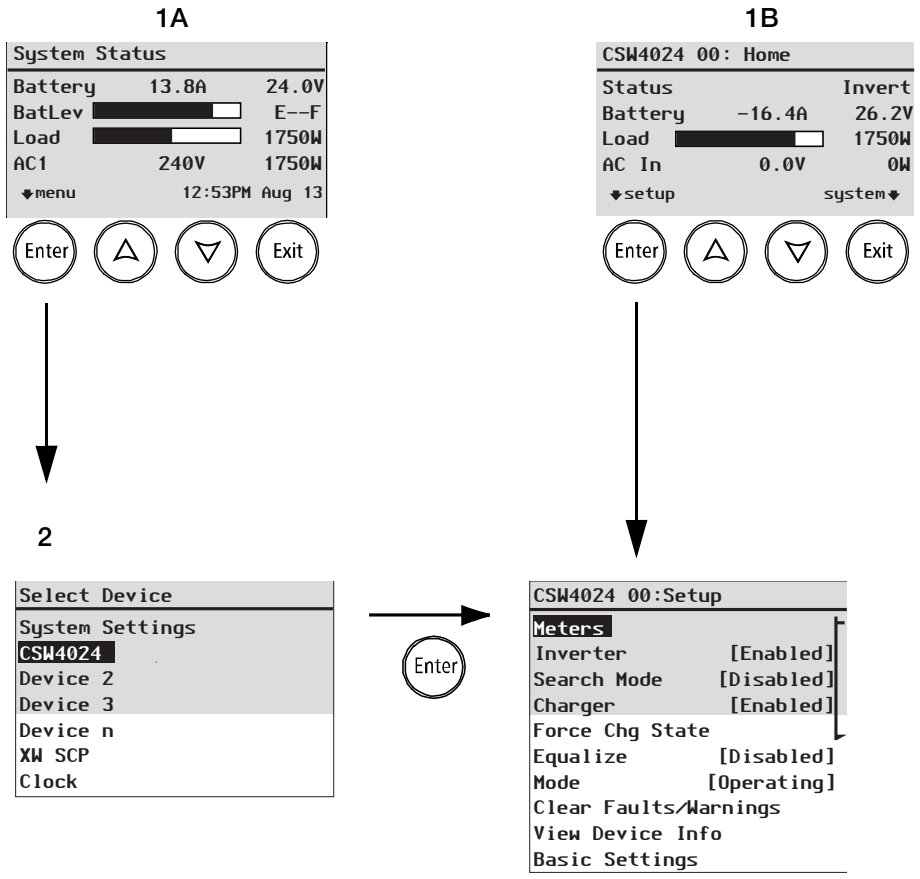


Figure 3-7 Navigate To Conext SW Setup Menu

Table 3-4 Conext SW Setup menu

Menu Item	Description
Inverter	Enables or disables the inverter. See "To change an operational setting:" on page 3–18. **NOTE:** When changing the operational setting for Inverter, remember that enabling the inverter is not the same as the inverter being turned on. An "enabled" inverter can either be on or off, that is inverting or not inverting, respectively. A "disabled" inverter cannot be turned on.
Search Mode	Enables or disables Search Mode. See "To change an operational setting:" on page 3–18. For more information on this setting see "Using Search Mode" on page 4–11.
Charger	Enables or disables the charger. See "To change an operational setting:" on page 3–18. **NOTE:** When changing the operational setting for Charger, remember that enabling the charger is not the same as the charger being turned on. An "enabled" charger can either be on or off, that is charging or not charging, respectively. A "disabled" charger cannot be turned on except when the Auto Chg Enable is set to Enabled. See "Charger Settings Menu" on page 4–13 for details.
Force Chg State	Manually changes the charge stage to either Bulk or Float (when 3-Stage cycle is selected) or Bulk or NoFloat (when 2-Stage cycle is selected). See "To change an operational setting:" on page 3–18.
Equalize	Enables or disables battery equalization. See "To change an operational setting:" on page 3–18.
Mode	Selects the Conext SW operating mode: Operating or Standby. The red Standby button on the SCP has similar functionality. See "To change an operational setting:" on page 3–18.
Clear Faults/ Warnings	Clears any active faults that were detected or warnings. If the fault detection or warning condition is still present, the fault detection or warning message may reappear. See "To clear fault detections/warnings:" on page 3–18.
View Device Info	Displays the View Device Info logs screen. On the Device Info screen you can view the Warning, fault detection, and Event Logs. See "View Device Info Logs" on page 5–4.
Meters	Displays the Meters screen. See "To view the Meters screen:" on page 3–15.
Basic Settings	Select to display and/or adjust the basic Conext SW settings. See "Configuring Basic Settings" on page 4–7.
Advanced Settings	Select to display and/or adjust the advanced Conext SW settings. See "Configuring Advanced Settings" on page 4–9.

NOTE: **Meters** and **View Device Info** are not operational settings rather they are informational. Basic and Advanced Settings are covered in another section of the guide.

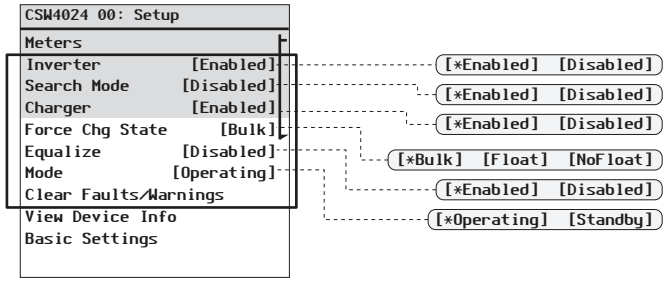


Figure 3-8 Conext SW Setup Menu Operational Settings

To change an operational setting:

1. From the device **Setup** menu screen, use the up or down arrow buttons to highlight any operational setting you wish to change.
2. Press Enter then use the up or down arrow buttons to move between selections. For example, the inverter setting can be changed to either **Enabled** or **Disabled**.
3. Press Enter to confirm the selection.
4. Press Exit (twice) to go back to the **System Status** menu screen.

To clear fault detections/warnings:

1. From the device **Setup** menu screen, use the up or down arrow buttons to highlight **Clear Faults/Warnings**.
2. Press Enter to clear the highlighted selection.

4 Configuration via SCP

The following topics will be covered in this chapter.

- Viewing Conext SW's Firmware Version
- Setting System Time and Date
- Viewing Basic and Advanced Settings
- Configuring Basic Settings
- Configuring Advanced Settings

Viewing the Firmware Revision Number

You may need to view the firmware revision number (**F/W Rev.**) of the Conext SW when troubleshooting the unit with authorized service personnel.

To view the firmware revision number:

1. From the **System Status** screen, press the Enter button.
   The **Select Device** menu screen appears.
2. From the **Select Device** screen, press the Enter button.
   The **System Settings** menu screen appears.
3. From the **System Settings** screen, press the down arrow button to highlight **View Device Info** then press Enter.
   The **Device Info** screen appears.
4. Read the displayed information.
   The series of numbers and letters opposite **F/W Rev.** is the firmware revision number.
5. Press Exit (three times) to return to the **System Status** screen.

Setting the Time and Date

The system time and date are set using the SCP. Time-stamped events such as fault detections and warnings and logged historical data require that the system be set to the correct time.

The SCP has an internal clock that controls the time for all Xanbus-enabled devices in the system. You can set the time, time format, and date on the Clock menu. The Clock menu is accessible on the Select Device menu.

To set the time and date:

1. From the **System Status** screen, press the Enter button.
   The **Select Device** menu screen appears.
2. From the **Select Device** screen, press the down arrow button to highlight **Clock** then press Enter.
   The **Clock** screen appears and **Set Time** is highlighted.
3. Press Enter and use the up and down arrow buttons to change the hour setting.
4. Press Enter and use the up and down arrow buttons to change the minute setting.
5. Press Enter and use the up and down arrow buttons to select AM or PM. This is not applicable if the 12/24 Hour setting is set to 24.
6. Press the down arrow button to highlight **Set Date**.
7. Press Enter and use the up and down arrow buttons to change the month setting.
8. Press Enter and use the up and down arrow buttons to change the day setting.
9. Press Enter and use the up and down arrow buttons to change the year setting.
10. Press Enter to confirm the changes.
11. Press Exit (twice) to return to the **System Status** screen.

Viewing the Basic and Advanced Settings Menus

Basic Settings menu

The Conext SW configuration settings can be viewed in Basic and Advanced formats. The Basic Settings include configuration items you may have to adjust routinely or as part of initial setup. The Basic Settings option appears by default on the Setup menu screen.

The Conext SW Basic settings include menus for configuring:

- Battery type setting (see page 4–7).
- Battery capacity setting (see page 4–7).
- Maximum charging rate setting (see page 4–7).
- Charging cycle setting (see page 4–7).
- Recharge volts setting (see page 4–7)
- AC priority setting (see page 4–7).
- AC In Breaker settings (see page 4–7).
- Low battery cutout setting (see page 4–7).

To view the Basic Settings menu:

◆ From the Setup menu, scroll to the bottom of the screen to highlight Basic Settings and press Enter. See Figure 4-2.

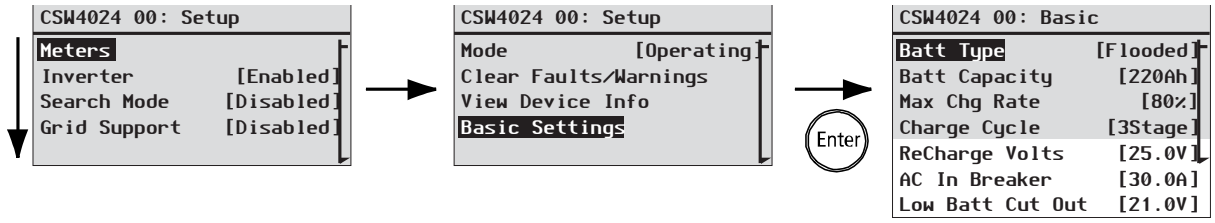


Figure 4-1 Selecting Basic Settings

To select and change a configurable setting:

1. On the desired configuration menu, press the up arrow or down arrow button to highlight the setting you want to change.
2. Press Enter to highlight the current value of the setting.
3. Press the up arrow or the down arrow button to change the value. Hold down the button to scroll through a large range of values quickly.

   The previously set value appears with an asterisk (*) beside it.
4. Press Enter to select the value.
5. If you have another setting to change, return to step 1.

   Or

   If you have no more settings to change, press Exit until the SCP displays the desired screen or menu.

Advanced Settings menu

The Advanced Settings option gives you access to the full range of Conext SW settings, including everything displayed on the Basic menu. As a safeguard against unintended Advanced configuration, the SCP displays the Basic settings by default. To view the Advanced settings, you must perform a special keypress.

NOTICE

EQUIPMENT DAMAGE

The advanced settings are intended for qualified installation/service personnel only. Before changing advanced settings, you must be familiar with the settings and the system-wide impact of changing those settings. Setting parameters incorrectly could damage connected equipment (such as batteries) or could severely affect the performance of your system. Incorrect charging configuration can lead to battery damage.

Failure to follow these instructions can result in equipment damage.

To select the Advanced Settings menu:

1. On the **`Select Device`** menu, select a Conext SW device.
2. Press Enter. The **`Setup`** menu screen appears.
3. Press Enter + up arrow + down arrow at the same time.

NOTES:

- This keypress (Enter + up arrow + down arrow) enables the Advanced settings for every device in the system.
- After performing the keypress, “Advanced Settings” appears at the top of the Setup menu (see Figure 4-2). When the keypress is performed again, the Setup menu displays “Basic Settings” as the last item on the menu (see Figure 4-1).

The Conext SW Advanced settings include menus for configuring:

- Inverter settings (see page 4–9).
- Charger settings (see page 4–13).
- AC transfer limit settings (see page 4–20.
- Generator support settings (see page 4–22).
- Multiple unit operation, including customizing the default model name of the inverter/charger and setting its network device number. Setting the device number is important when multiple Conext SW units are on the Xanbus network and sharing connections such as AC loads and AC generator. The device number is also used when configuring paralleled Conext SW units for master-slave operation (see page 4–23).

Additionally, from Conext SW Advanced settings, you can:

- Restore factory defaults
- Access other advanced features

To view the Advanced Settings menu:

◆ From the Setup menu, with Advanced Settings highlighted, press Enter. See Figure 4-2.

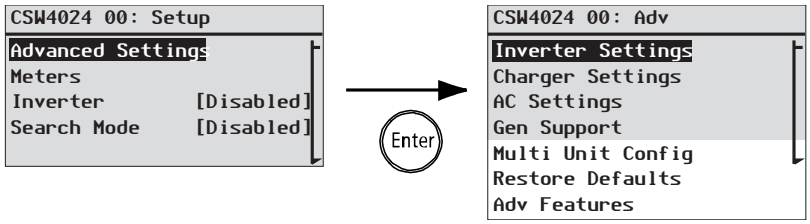


Figure 4-2 Selecting Advanced Settings

To select and change a configurable setting:

1. On the desired configuration menu, press the up arrow or down arrow button to highlight the setting you want to change.
2. Press Enter to highlight the current value of the setting.
3. Press the up arrow or the down arrow button to change the value. Hold down the button to scroll through a large range of values quickly.

   The previously set value appears with an asterisk (*) beside it.
4. Press Enter to select the value.
5. If you have another setting to change, return to step 1.

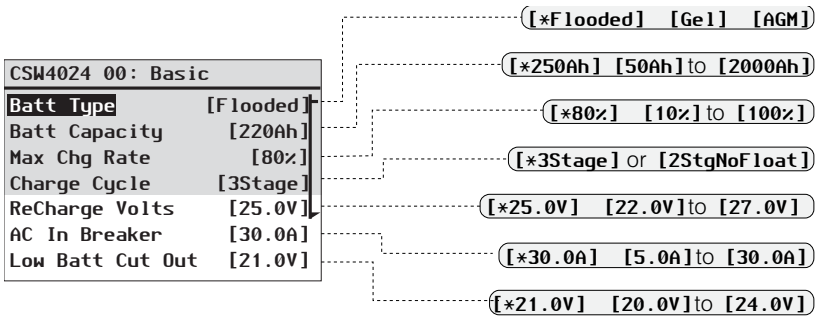
   Or

   If you have no more settings to change, press Exit until the SCP displays the desired screen or menu.

IMPORTANT: If you have no more settings to change, it is recommended to leave the **Setup** menu in the Basic Settings format to help prevent unintended configuration. If the **Setup** menu displays “Advanced Settings,” press Enter + up arrow + down arrow at the same time. The **Setup** menu should then display **Basic Settings** as the last item on the menu.

Configuring Basic Settings

An overview of the Conext SW Basic Settings menu structure is shown below.



Follow procedures on “To select and change a configurable setting:” on page 4–4 to change the settings.

Figure 4-3 Menu Map of the Conext SW Basic Settings

Table 4-1 Setting Defaults and Ranges

Model	SW 2524 120/240			SW 4024 120/240		
Item	Default	Min	Max	Default	Min	Max
Batt Type	Flooded	Flooded, Gel, AGM, Custom		Flooded	Flooded, Gel, AGM, Custom	
Batt Capacity	250Ah	50Ah	2000Ah	440Ah	50Ah	2000Ah
Max Chg Rate	100%	10%	100%	100%	10%	100%
Charge Cycle	3Stage	3Stage, 2StgNoFloat		3Stage	3Stage, 2StgNoFloat	
ReCharge Volts	25.0V	22.0V	27.0V	25.0V	22.0V	27.0V
AC In Breaker	30A	5A	30A	30A	5A	30A
Low Batt Cut Out	21.0V	20.0V	24.0V	21.0V	20.0V	24.0V

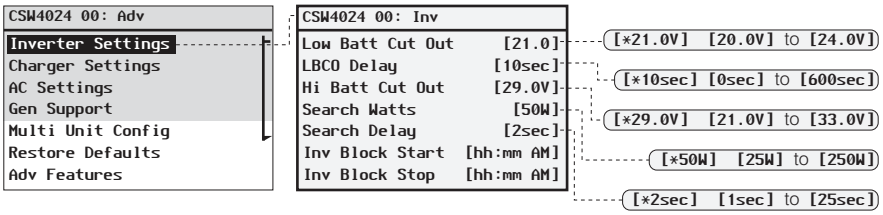
Table 4-2 Basic Settings

Item	Description
Batt Type	Sets the system battery chemistry and type: **Flooded**, **AGM**, and **Gel**.
Batt Capacity	Selects the system battery capacity in amp hours.
Max Chg Rate	Sets the percentage of the maximum DC output current that is available to the charger. The maximum DC output current for different models is: SW 2524 120/240 — 65 ADC SW 4024 120/240 — 90 ADC If multiple Conext SWs are charging the same battery bank, set each inverter's **Max Chg Rate** to 1/n of the desired charge rate (where n is the number of inverter/chargers).
Charge Cycle	Sets the charging method: **3-Stage** (bulk, absorption, float) or **2StgNoFloat** (bulk, absorption, no float).
ReCharge Volts	Sets the recharging volts to tell the charger to initiate charging when the battery drains past the value setting.
AC In Breaker	Sets the breaker limit of incoming AC (generator or grid).
Low Batt Cut Out	Low Battery Cut Out (LBCO) controls when the inverter stops producing AC output due to a low battery voltage condition. The inverter will stop producing AC output only after this level has been reached for the period of time set by the **LBCO Delay**. This setting is not temperature compensated.

Configuring Advanced Settings

Inverter Settings Menu

The **Inverter Settings** menu contains settings that control when the Conext SW starts and stops producing AC output.



Follow procedures on "To select and change a configurable setting:" on page 4–6 to change the settings.

Figure 4-4 Inverter Settings Menu Screen

Table 4-3 Setting Defaults and Ranges

Model	SW 2524 120/240			SW 4024 120/240		
Item	Default	Min	Max	Default	Min	Max
Low Batt Cut Out	21.0V	20.0V	24.0V	21.0V	20.0V	24.0V
LBCO Delay	10sec	0sec	600sec	10sec	0sec	600sec
Hi Batt Cut Out	33.0V	29.0V	34.0V	33.0V	29.0V	34.0V
Search Watts	50W	25W	250W	50W	25W	250W
Search Delay	2sec	1sec	25sec	2sec	1sec	25sec
Inv Block Start	12:00AM	n/a		12:00AM	n/a	
Inv Block Stop	12:00AM	n/a		12:00AM	n/a	

Table 4-4 Inverter Settings Description

Item	Description
Low Batt Cut Out	Same description as "Basic Settings" on page 4–8.
LBCO Delay	LBCO Delay controls how long the inverter is allowed to operate at or below the **Low Batt Cut Out** level before turning off due to a low battery voltage condition. The inverter will stop producing AC output only after the **Low Batt Cut Out** level has been reached for this uninterrupted period of time. Once the inverter has shut off, the battery voltage must rise 4 volts above the **Low Batt Cut Out** setting for inverter operation to resume.

Table 4-4 Inverter Settings Description

Item	Description
Hi Batt Cut Out	Hi Batt Cut Out sets the maximum battery voltage at which the inverter will operate. If the battery voltage exceeds this limit for more than one minute, the Conext SW displays a fault message and shuts down. The inverter will not support AC loads when in this condition. If a qualified AC source is present, the unit passes AC through to the loads. The inverter automatically restarts when the voltage drops to 3 volts below the **Hi Batt Cut Out** setting. If battery voltage continues to rise after shutdown, an external charger may still be charging the batteries. The Conext SW cannot control how external chargers operate.
Search Watts	Search Watts sets the Conext SW's search sensitivity when search mode is enabled. When a load larger than this setting is present, the inverter starts producing AC output. Enabling search mode from the **Setup** menu can minimize power draw from the battery during periods of low demand from loads. Also see "Using Search Mode" on page 4–11.
Search Delay	Search Delay sets the time between search pulses. When searching for loads, the Conext SW sends out search pulses to determine if a load is present. If the Conext SW finds a load above the **Search Watts** setting, the inverter turns on. Conext SW power draw while in search mode decreases when **Search Delay** is increased, but the Conext SW's response time to active loads is slower.
Inv Block Start	Sets the time to halt inverting. See "Using Inverter Block" on page 4–12 for more information.
Inv Block Stop	Sets the time to resume inverting. See "Using Inverter Block" on page 4–12 for more information.

Using the Low Battery Cut Out and LBCO Delay Settings

The Low Batt Cut Out setting is the lowest battery voltage level acceptable for use by the inverter. When the batteries discharge to the Low Batt Cut Out setting and are held at or below this level for the LBCO Delay time, the inverter output shuts down and transfers any available AC source (like an AC generator) to the charger to bring the battery level back above the Low Batt Cut Out setting. After shutdown, the inverter does not support any AC loads, and AC loads must be powered by an AC generator.

If using an automatic generator starting system, it is recommended to set the Xanbus AGS voltage trigger setting higher than the Conext SW Low Batt Cut Out voltage. Otherwise, inverter output turns off before the generator automatically starts, causing the battery voltage to recover slightly. This may then stop the Xanbus AGS from starting the generator or result in the inverter cycling on and off multiple times before the generator automatically starts.

If using an automatic generator starting system with the start trigger set to the same voltage as the LBCO voltage, do not set the LBCO Delay for less than the amount of time it takes the generator to start and connect. Otherwise, inverter output turns off before the generator automatically starts, causing the battery voltage to recover slightly. This may then stop the Xanbus AGS from starting the generator or result in the inverter cycling on and off multiple times before the generator automatically starts.

Using Search Mode

Why use Search mode?

Search mode allows the inverter to selectively power only items that draw more than a certain amount of power, which can result in power savings.

The Conext SW has a no-load power draw of about 38 W (SW 2524 120/240) and 40 W (SW 4024 120/240). Enabling Search mode reduces this power draw to less than 8 W for all models.

Search mode operates differently in single-unit and multiple unit installations.

Single units

When a single Conext SW has Search mode enabled, the inverter sends electrical search pulses through its AC output. These search pulses search for connected AC loads. The delay between search pulses is set using the Search Delay setting.

After a load larger than the Search Watts setting is detected, the inverter turns on.

Multiple units

To use Search mode in multiple unit installations with two paralleled Conext SW units, the master unit must have Search mode disabled. The slave unit must have Search mode enabled.

When Search mode is disabled on the master unit and Search mode is enabled on the slave unit, only the master Conext SW operates, and the slave unit comes online only when the load exceeds approximately 60% of the rated output of the master unit. When the load drops below 20% of the master's rated output, the slave unit turns off.

When to set up Search mode

The Search mode feature is only valuable if the inverter can spend a couple of hours “sleeping” each day. Therefore, if Search mode is to be used it must be adjusted properly. The initial adjustment should be made so that the inverter comes on only when needed.

Certain types of loads can cause Search mode not to work as expected. These types of loads are described on “Problem Loads” on page 5–3 of the Troubleshooting chapter. If these kinds of loads are in the system, follow the suggestions given to eliminate the problem. If the problem loads cannot be eliminated, there are two work-around solutions:

1. Disable **Search Mode** from the main Conext SW **Setup** menu, causing the inverter to always remain at full output voltage.
2. Use a search-friendly companion load whose only purpose is to be switched on to wake up the inverter to power the load that is unable to bring the inverter out of Search mode.

NOTES:

- Search mode, by function, cannot work with clocks and timers or devices that need power 24 hours a day. Examples of devices with timers include video recorders, coffee makers with brew timers, refrigerators, and freezers with defrost timers. Examples of devices that need power 24 hours a day include telephone answering machines, alarm systems, motion detection lights, and some thermostats.
- When the inverter is searching the output for loads, lights that have a wattage lower than this setting may flash momentarily.

Using Inverter Block

The Inverter Block feature halts inverter function for a period of time each day. This period of time is defined by the **Inv Block Start** and **Inv Block Stop** settings. Inverter Block allows you to control which time period is not ideal for inverting. This can be a time period when conserving battery power is more important than running loads.

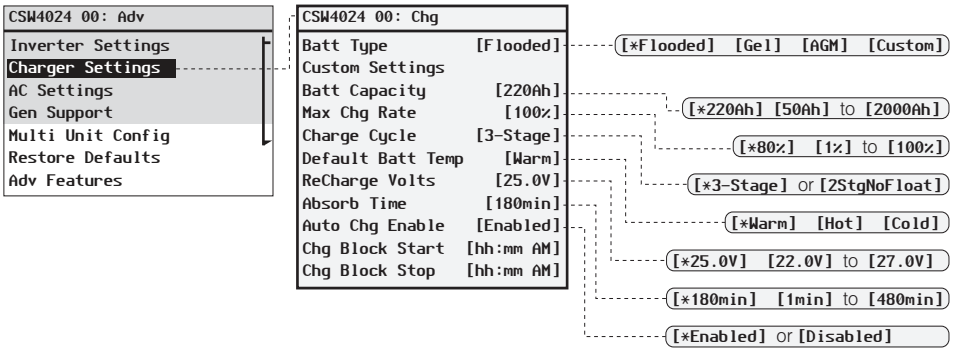
The **Inverter** setting must be initially **Enabled** in order for the Inverter Block to work as intended. The **Inv Block Start** setting disables inverter function if the inverter is initially enabled and then **Inv Block Stop** enables the inverter function. However, if the **Inverter** setting is initially **Disabled** when **Inv Block Start** commences, then the succeeding **Inv Block Stop** will not enable inverter function automatically. The inverter will remain disabled.

Setting the **Inv Block Start** and **Inv Block Stop** to the same time disables Inverter Block. Disabling Inverter Block means that inverting is allowed to occur at any time when the right conditions for inverting exist.

NOTE: In a multiple unit configuration, set the same Inverter Block settings to both the master and slave units.

Charger Settings Menu

The **Charger Settings** menu provides options for configuring the Conext SW to operate from your battery bank.



Follow procedures on "To select and change a configurable setting:" on page 4–6 to change the settings.

Figure 4-5 Charger Settings Menu Screen

Table 4-5 Setting Defaults and Ranges

Model	SW 2524 120/240			SW 4024 120/240		
Item	Default	Min	Max	Default	Min	Max
Batt Type	Flooded	Flooded, Gel, AGM, Custom		Flooded	Flooded, Gel, AGM, Custom	
Custom Settings	See page 4–18.			See page 4–18.		
Batt Capacity	See page 4–7.			See page 4–7.		
Max Chg Rate	100%	10%	100%	100%	10%	100%
Charge Cycle	3Stage	3Stage, 2StgNoFloat		3Stage	3Stage, 2StgNoFloat	
Default Batt Temp	Warm	Hot, Warm, Cold		Warm	Hot, Warm, Cold	
ReCharge Volts	25.0V	22.0V	27.0	25.0V	22.0V	27.0V
Absorb Time	180min	1min	480min	180min	1min	480min
Auto Chg Enable	Enabled	Enabled, Disabled		Enabled	Enabled, Disabled	
Chg Block Start	12:00AM	n/a		12:00AM	n/a	
Chg Block Stop	12:00AM	n/a		12:00AM	n/a	

Table 4-6 Charger Settings Menu Description

Item	Description
Batt Type	Sets the system battery chemistry and type: **Flooded**, **AGM**, **Gel**, and **Custom**. Selecting **Custom** displays the **Custom Settings** item, which allows you to adjust the settings for each charging stage.
Custom Settings	See page 4–18.
Batt Capacity	Selects the system battery capacity in amp hours. Setting the battery capacity to zero (0) resets the charging current to its default values. Zero Ah battery capacity implies there is no absorption exit current criteria and absorption only exits when the absorption timer (default 3hrs, range 1min-8hr) expires.
Max Chg Rate	Same description as “Basic Settings” on page 4–8.
Charge Cycle	Sets the charging method: **3Stage** (bulk, absorption, float) or **2StgNoFloat** (bulk and absorption only, no float).
Default Batt Temp	Selects the battery temperature charging compensation if a battery temperature sensor is not installed. In the absence of a battery temperature sensor, the charger uses one of three settings: **Cold** (50 °F/10 °C), **Warm** (77 °F/25 °C), or **Hot** (104 °F/40 °C).
ReCharge Volts	Sets the recharging volts to tell the charger to initiate charging when the battery drains past the value setting.
Absorb Time	Sets the maximum time spent in the absorption stage, before transitioning to float or no float. **NOTE**: The Absorb Time setting resets to its default value of 180 minutes when the Battery Type is changed except when changing to Custom Settings. In Custom Settings, the Absorb Time setting will not reset to its default value.
Auto Charge Enable	When this setting is enabled, it overrides the “Charger” function to begin charging automatically when qualified AC is present. This happens even when the charger function is previously disabled.
Chg Block Start	Sets the time to halt charging. See “Using Charger Block” on page 4–17 for more information.
Chg Block Stop	Sets the time to resume charging. See “Using Charger Block” on page 4–17 for more information.

Battery Charger Functions

When AC power is available, the Conext SW can operate as a battery charger. Different battery types and chemistries require different charging voltage levels. Not charging batteries at the required levels can shorten battery life or damage the batteries. The Conext SW is configured at the factory to work with the battery types recommended for inverter applications. If the default settings do not work for your specific installation, you can adjust the charge stage settings (as recommended by the battery manufacturer) on the **Custom** (Battery) **Settings** menu (see page 4–18).

IMPORTANT: This information is provided for guidance only. Variations in battery chemistry and site-specific environmental considerations mean that you should consult your system designer or battery manufacturer for specific recommendations for appropriate battery voltage and current settings.

Multi-Stage Charging Process

The charging cycle is a multi-stage process. Whenever qualified AC power is present at the inverter's input, it passes power through to the connected load and begins charging the batteries.

NOTE: If the AC input fails or drops below the lower VAC limit (as set in AC Settings), the complete multi-stage charge cycle (Bulk, Absorption, Float/No Float) restarts once the source AC returns to within tolerance condition. If the batteries are already nearly full, the charge cycle will take little time to complete.

Bulk Stage

Bulk charge is the first stage in the charging process and provides the batteries with a controlled, constant current. Once the battery voltage rises to the bulk voltage threshold, the charger switches to the Absorption stage.

Absorption Stage

Absorption charge is the second stage of battery charging and provides the batteries with a controlled, constant voltage. During this stage, the current drawn by the batteries slowly decreases. When this current falls below 2% of the battery capacity, or when the configurable Absorb Time expires, the charger switches to the Float or NoFloat stage, depending on the selected charge cycle.

NOTE: If there are DC loads on the batteries, the charger's current may never decrease to a level to initiate the next stage of charging. In this case, the charger would stay in absorption until the Absorb Time setting is reached.

To make sure the charger does not remain in absorption for too long, adjust Absorb Time on the Charger Settings menu. The timer begins at the start of the absorption stage and terminates absorption charging if the charge current does not decrease to below 2% of the battery capacity before the Absorb Time setting expires. The Absorb Time setting may be increased if the charge cycle continually runs the full Absorb Time in the absence of DC loads. This is an indication of too large a battery bank for the selected Absorb Time setting.

Also, the Absorption Time setting resets to its default value of 180 minutes when the Battery Type is changed.

Float Stage

Float charge maintains a trickle charge on the batteries whenever AC is present on the Conext SW input. Float charging reduces battery gassing, minimizes watering requirements (for flooded batteries), and makes sure the batteries are in a constant state of readiness. When three-stage charging is selected, the charger automatically switches to the float stage after the batteries have received a bulk and absorption charge. The batteries will be maintained at the default float voltage level for the selected battery type or the voltage selected under Float Voltage on the custom battery Settings menu.

NOTE: The battery voltage can increase above the float voltage when using an external charging device such as PV arrays, wind turbines, or micro-hydro generators. Be sure to include appropriate charge management equipment with all external DC sources.

Two-Stage

Two-stage (bulk and absorption only, no float) mode differs from an ordinary three-stage charge mode in that it does not continuously maintain the battery at float voltage. Instead, the Conext SW begins charging the battery in bulk mode whenever the battery voltage drops below the recharge level. While the battery voltage is above the recharge level, the inverter continues to pass power through from the AC source to the loads but does not actively charge the batteries.

Equalize-Charging the Batteries

Many battery manufacturers recommend periodic equalize charging to level out the voltage between individual cells, improving battery performance and lifespan.

Over time, the battery's electrolyte can become stratified, causing inactive areas in the plate material. If this condition is allowed to continue for extended periods, the battery plates can sulfate and become unusable. Equalizing the batteries is a controlled overcharging method that mixes up the electrolyte and reactivates the unused areas of the plate material, restoring batteries to a full state of charge.

Consult the battery manufacturer's recommendation for equalize charging settings.

To start equalizing the batteries:

- On the device **Setup** menu, highlight **Equalize** and select **Enabled**.

NOTE: Only flooded or vented batteries should be equalize-charged. Hydrogen and oxygen gases are produced when batteries are equalize-charged. See warning below.

⚠WARNING

EXPLOSION HAZARD

Provide adequate ventilation and remove all sources of ignition to prevent explosion.

Failure to follow these instructions can result in death or serious injury.

IMPORTANT: In a system where more than one device is capable of equalizing batteries (such as a system including multiple Conext SW units and Solar Charge Controllers), there is no system-wide equalization command for all devices. To equalize with multiple devices, each would have to be enabled individually. Alternatively, equalization can be performed using only one device. During the equalization process, one device applies the equalization charge while the other devices continue to operate in synchronized charge mode, typically in float (three-stage charging) or no-float (two-stage charging).

Using Charger Block

The Charger Block feature halts charging for a period of time each day. This period of time is defined by the **Chg Block Start** and **Chg Block Stop** settings. In areas where the utility charges variable rates for electricity, it is preferable to use utility power for charging only during non-peak hours. Charger Block can prevent utility power from being used for battery charging during peak billing periods. During the time period set between **Chg Block Start** and **Chg Block Stop**, AC input continues to be passed through to the loads. Inverter operation remains unaffected during the charger block period. During the Charger Block period, no charging occurs even if the batteries discharge below the **ReCharge Volts** setting. However, a Solar Charge Controller may charge batteries during the Charger Block period.

If the charger is operating (that is, in Float, Absorption, Bulk, or Equalize stage) at the **Chg Block Start** time, charging stops immediately and the charger enters an idle state identical to No Float (see “Two-Stage” on page 4–16). When the Charger Block period is over, the charger does not resume the charge stage that **Chg Block Start** interrupted. Instead, if the batteries are above the **ReCharge Volts** setting, the charger remains idle. If the battery voltage falls below the **ReCharge Volts** setting during the Charger Block period, the Conext SW Inverter/Charger begins a new charge cycle with the Bulk stage after the Charger Block period has expired (at the **Chg Block Stop** time).

Setting the **Chg Block Start** and **Chg Block Stop** to the same time disables Charger Block. Disabling Charger Block means that charging is allowed to occur at any time when the right conditions for charging exist.

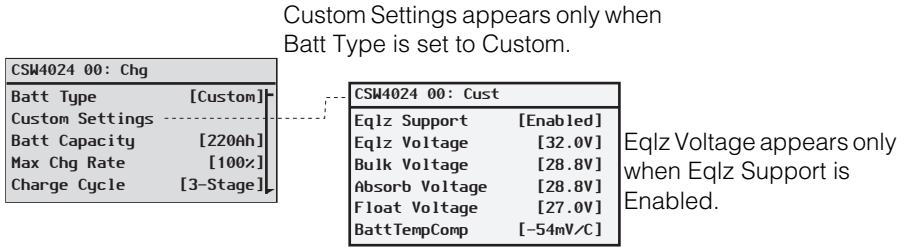
Custom Battery Settings Menu

NOTICE

EQUIPMENT DAMAGE

Consult your battery manufacturer and associated documentation before setting a custom battery type and before battery charging or equalization.

Failure to follow this instruction may cause damage to the battery.



Follow procedures on "To select and change a configurable setting:" on page 4–6 to change the settings.

Figure 4-6 Custom Settings Menu Screen

Table 4-7 Setting Defaults and Ranges

Model	SW 2524 120/240			SW 4024 120/240		
Item	Default	Min	Max	Default	Min	Max
Eqlz Support	Enabled	Enabled, Disabled		Enabled	Enabled, Disabled	
Eqlz Voltage	32.0V	27.0V	32.0V	32.0V	27.0V	32.0V
Bulk Voltage	28.8V	24.0V	32.0V	28.8V	24.0V	32.0V
Absorb Voltage	28.8V	24.0V	32.0V	28.8V	24.0V	32.0V
Float Voltage	27.0V	22.0V	32.0V	27.0V	22.0V	32.0V
Batt Temp Comp	-54mV/C	-0mV/C	-90mV/C	-54mV/C	-0mV/C	-90mV/C

The **Custom Battery Settings** menu can be viewed if **Custom** is selected as the **Batt Type**. This menu allows you to adjust charging and equalization voltage for batteries with specifications that fall outside the default settings for the battery types the Conext SW offers. You can also adjust the temperature compensation constant for the battery temperature sensor on this menu.

IMPORTANT: All settings for configuring a custom battery type are based on the default settings for a flooded battery type.

Table 4-8 Custom Battery Settings Menu Description

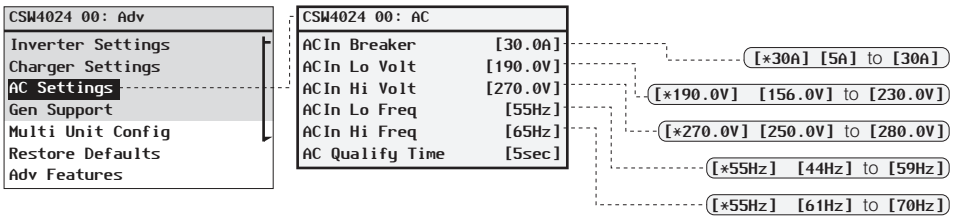
Item	Description
Eqlz Support	Enables or disables the ability to enter an equalization cycle. Refer to the battery manufacturer's specifications to determine whether equalization is recommended.
Eqlz Voltage[a]	Selects the equalization voltage. Consult your battery manufacturer for equalization voltage setting.
Bulk Voltage	Sets the bulk voltage for a custom battery type. See note below.
Absorb Voltage	Sets the absorption voltage for a custom battery type.
Float Voltage	Sets the float voltage for a custom battery type. See note below.
Batt Temp Comp	Battery temperature compensation for a custom battery type. This setting is the reference that the BTS uses to adjust the charging voltage when the temperature is above or below 77 °F (25 °C).

a. The **Eqlz Voltage** setting is displayed when **Eqlz Support** is set to **Enabled**.

NOTE: If a warning is received indicating that a setting is not accepted by the SCP, gradually increase the value of the setting until the SCP accepts it. This type of warning means that an internal minimum threshold value is being crossed and therefore the setting cannot be saved.

AC Settings

The **AC Settings menu** configures the voltage and frequency limits for AC In. These are the limits at which the Conext SW considers input voltage qualified—that is, suitable for charging batteries or powering loads. If the input voltage is not qualified according to these settings, the Conext SW transfers from using AC input to inverting.



Follow procedures on “To select and change a configurable setting:” on page 4–6 to change the settings.

Figure 4-7 AC Settings Menu Screen

Table 4-9 Setting Defaults and Ranges

Model	SW 2524 120/240			SW 4024 120/240		
Item	Default	Min	Max	Default	Min	Max
ACIn Breaker	30A	5A	30A	30A	5A	30A
ACIn Lo Volt	95V	78V	115V	95V	78V	115V
ACIn Hi Volt	135V	125V	140V	135V	125V	140V
ACIn Lo Freq	55Hz	44Hz	59Hz	55Hz	44Hz	59Hz
ACIn Hi Freq	65Hz	61Hz	70Hz	65Hz	61Hz	70Hz
AC Qualify Time	5sec	5sec	300sec	5sec	5sec	300sec

Table 4-10 AC Settings menu

Item	Description
ACIn Breaker	Sets the AC Input breaker size, based on the size of the installed AC breaker at the source. The Breaker size setting must not exceed the capacity of the AC source such as the grid or a generator. The Conext SW limits the maximum input current to this setting by derating its charging current. If the connected loads exceed the breaker setting, the AC breaker trips. The breaker may not trip if Gen Support is enabled and Gen Amps is configured not to exceed the AC source’s rated output current.

Table 4-10 AC Settings menu

Item	Description
ACIn Lo Volt	Sets the minimum acceptable AC input voltage level from the AC source (generator or grid). **NOTE**: It is recommended to leave this setting to its default value and not to set it to the maximum allowed. Doing so might inadvertently derate charging power in jurisdictions where the nominal AC mains voltage or generator output is at 110 volts.
ACIn Hi Volt	Sets the maximum acceptable AC input voltage level from the AC source (generator or grid).
ACIn Lo Freq	Sets the minimum acceptable AC input frequency from the AC source (generator or grid).
ACIn Hi Freq	Sets the maximum acceptable AC input frequency from the AC source (generator or grid).
AC Qualify Time	Sets the waiting time in seconds before the charger begins charging. Charging cannot begin until there is qualified AC (ACGood) so, the charger counts from the moment AC is qualified up to the time set in **AC Qualify Time** before starting to charge.

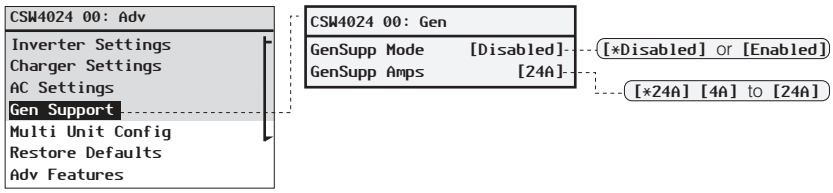
Gen Support Settings

GEN Support allows power to be automatically drawn from the batteries to assist an AC generator to support heavy loads (that is, loads that exceed the available current from the generator).

Generators have a limited output current and it is possible to reach this limit when operating heavy loads. The Conext SW is designed to assist the generator when heavy current demands load down the generator by supplying additional power from the batteries.

In addition, the battery charger can reduce its charging current to the batteries so the combined charge AC current and total load current does not exceed the capacity of the generator or trip its output breakers or fuses.

NOTE: Running and start-up (peak) currents are limited to the maximum current limits of the inverter.



Follow procedures on “To select and change a configurable setting:” on page 4–6 to change the settings.

Figure 4-8 GEN Support Menu Screen

Table 4-11 GEN Support Menu Description and Values[a]

Setting	Description	Default	Range
GenSup Mode	Turns the generator support feature on and off.	**Disabled**	**Disabled, Enabled**
GenSup Amps	Sets the generator load level at which the Conext SW supplies power from the batteries to support the generator.	**24A**	**4A** to **24A**

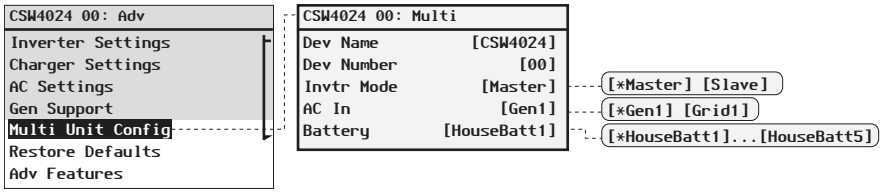
a.Applies to all Conext SW models.

The Conext SW supports the generator when the AC load current drawn from the generator exceeds the **GenSup Amps** setting for one to two seconds.

The system can enter this state if the battery voltage is above **Low Battery CutOut (LBCO)** plus 1 volt and generator support is enabled.

Multi Unit Config Menu

The **Multi Unit Config** menu configures the Conext SW to operate as a part of a multiple unit installation[1].



Follow procedures on "To select and change a configurable setting:" on page 4–6 to change the settings.

Figure 4-9 Multi Unit Config Menu Screen

IMPORTANT: Accessing this menu automatically places the Conext SW in standby mode. When entering the **Multi Unit Config** menu, the unit identifies itself by flashing all front panel LEDs. After exiting the **Multi Unit Config** menu, the Conext SW returns to operating mode and the front panel LEDs stop flashing.

Table 4-12 Multi Unit Menu Description and Values[a]

Item	Description	Default	Range
Dev Name	Allows the customizing of the default name for the inverter/charger. This setting is optional and does not affect operation. See "Setting the Device Name" on page 4–25.	**CSW4024** will vary from model to model.	Can be changed by the user.
Dev Number	Allows setting of a unique unit number in a multiple-unit system. See "Setting the Device Number" on page 4–26.	**00** usually for a single unit or for two units, this will designate the master.	**00–31**

1.In Conext SW Inverter/Chargers, multiple unit configuration (installation) is limited to two units - one master unit and one slave unit.

Table 4-12 Multi Unit Menu Description and Values[a]

Item	Description	Default	Range
Invtr Mode	For this to operate, one Conext SW must be configured to **Master** and the other as **Slave**, otherwise a system-wide fault is asserted.	**Master**	**Master, Slave**
AC In	For identifying the type of AC source when two power sources are available and an AGS is also present.	**Gen1**	**Gen1, Grid1**
Battery	For identifying batteries only.	**HouseBatt1**	**HouseBatt1.. HouseBatt5**

a. Applies to all Conext SW models.

When installing a multiple unit system, every setting on the **Multi Unit Config** menu (except for **Dev Name**) must be configured for each of the two Conext SW units in the system. The settings should be configured in the following order: **Dev Number** then **Invtr Mode**.

AC In setting

The Conext SW accepts only a single AC source - either from the grid or from a generator. In a power system where the Conext SW is solely connected to the grid and an AGS is neither present nor required, the **AC In** setting can be either **Gen1** or **Grid1**. Therefore, the default value of **Gen1** need not be changed.

In a situation where the AC source is a generator and the AGS is being used to start the generator to produce AC power, the **AC In** setting must be set to **Gen1**. Therefore, the default value of **Gen1** must remain unchanged.

In a power system where the two AC sources are available but only one AC source can be used, an external transfer switch becomes necessary. When an external transfer switch is used and an AGS (with a B+ signal connection) is also present, change the **AC In** setting to **Grid1**.

Setting the Device Name

The **Dev Name** setting allows you to customize the name of the Conext SW as it is displayed on other screens and menus.

The available characters are:

- A to Z
- a to z
- 0 to 9
- space

NOTE: Increasing the number of characters in a device name may cause other text on the same line to run off the edge of the screen. Device names should be limited to 10 characters or less.

To customize the Conext SW name:

1. On the device setup menu, select **Advanced Settings**.

   If **Basic Settings** appears instead of **Advanced Settings** on the Setup menu, display **Advanced Settings** by pressing Enter + up arrow + down arrow simultaneously.

   On the **Advanced Settings** menu, select **Multi Unit Config**, and then press Enter.
2. Select **Dev Name**, and then press Enter.

   The last letter of the Conext SW name is highlighted.
3. Begin customizing the device name.
   - To change the character, press the up or down arrow button. Holding down the button causes the characters to scroll more quickly.
   - To delete the character, press Exit.
   - To add characters, press Enter.
4. When the correct character is shown, press Enter to select it.
5. After pressing Enter to select the last character of your customized device name, press Enter again to return to the menu.

Setting the Device Number

Setting the device number gives a Xanbus-enabled device a unique identity when several devices of the same type are installed in the networked power system. When each identical device has a unique number, the SCP can correctly identify and display status information for each device. A device number consists of two digits ranging from 00 (default) to 31.

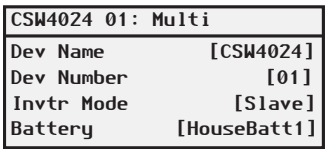
If only one of each device is installed in the networked power system, you do not need to set the device number. However, setting the device number to a value other than 00 is recommended in case you need to use the **Restore Defaults** command. After performing the command, checking that the device number has returned to 00 indicates that the command was successfully completed.

To set the Conext SW device number:

1. On the Conext SW **Setup** menu, select **Advanced Settings**.

   If **Basic Settings** appears instead of **Advanced Settings** on the Setup menu, display **Advanced Settings** by pressing Enter + up arrow + down arrow simultaneously.

   On the **Advanced Settings** menu, select **Multi Unit Config**, and then press Enter.
2. On the **Multi Unit Config** menu, select **Dev Number**. See Figure 4-10.
3. Press Enter to highlight the instance number.
4. Use the up and down arrow buttons to adjust the two-digit identifier number.
5. Press Enter.



Follow procedures on “To select and change a configurable setting:” on page 4–6 to change the settings.

Figure 4-10 Setting a Device Number

Restoring Factory Default Settings

The **Restore Defaults** command returns the Conext SW to factory default settings. After using the **Restore Defaults** command, the Conext SW is no longer configured for the power system.

NOTICE

EQUIPMENT DAMAGE

Do not use the **Restore Defaults** command while the Conext SW is operating. De-energize the power system and disconnect the Conext SW AC input before using the **Restore Defaults** command. Reconfigure the Conext SW before reconnecting the AC input and re-energizing the power system.

Failure to follow these instructions can damage the inverter/charger.

To restore Conext SW default settings:

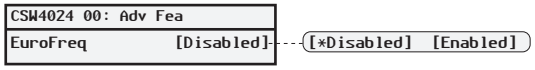
1. On the **Advanced Setup** menu, select **Restore Defaults**.

   Warning W252 appears, asking to confirm the **Restore Defaults** command.
2. To cancel the command, press Exit. To continue with the **Restore Defaults** command, press Enter.

IMPORTANT: If a warning is already active in the system, selecting Restore Defaults brings up the Warning List, with warning W252 at the top. Press Enter to view W252 and continue with the Restore Defaults process.

IMPORTANT: Restoring to default also means that the AC output frequency will change back to 60 Hz. See “Using the Advanced Features” on page 4–28 for information on changing the AC output frequency to 50 Hz.

Using the Advanced Features



Follow procedures on "To select and change a configurable setting:" on page 4–6 to change the settings.

Figure 4-11 Adv Features Menu Screen

Table 4-13 Adv Features Description and Values[a]

Item	Description	Default	Range
EuroFreq	When enabled, sets the AC output frequency to a constant 50Hz.	**Disabled**	**Enabled, Disabled**

a.Applies to all Conext SW models.

The default inverter AC output frequency is 60 Hz.

To change the inverter AC output frequency to 50 Hz:

1. Put the system in Standby mode. See "To change an operational setting:" on page 3–18.
2. Change the EuroFreq to **Enabled**. See "To select and change a configurable setting:" on page 4–6.

NOTICE

EQUIPMENT DAMAGE

Do not change the frequency to 50 Hz unless the equipment and appliances connected to the inverter's output can operate in this frequency setting.

Failure to follow these instructions can result in equipment damage.

3. Restore the system to Operating mode. See "To change an operational setting:" on page 3–18.

IMPORTANT: Restoring to default (see "Restoring Factory Default Settings" on page 4–27) means that the AC output frequency will change back to 60 Hz.

Configuration Sheet

SETTING		DESCRIPTION	DEFAULT	YOUR SETTING
Inverter Settings	Low Batt Cut Out	Select battery voltage below which batteries will be cut out	21.0V	
	LBCO Delay	Select the time delay before low battery cut out is engaged	10sec	
	Hi Batt Cut Out	Select the voltage above which batteries will be cut out	29.0V	
	Search Watts	Select Watts at which level Search Mode triggers on	50W	
	Search Delay	Select delay time before Search Mode triggers on	2sec	
	Inv Block Start	Sets the time to halt inverting	12:00AM	
	Inv Block Stop	Sets the time to resume inverting	12:00AM	
Charger Settings	Batt Type	Select your battery type (FLOODED, GEL, AGM, Custom)	Flooded	
	Custom Settings	Makes BATTERY CUSTOM SETTINGS screen visible	--	
	Eqlz Support	Enable battery EQUALIZE function	Enabled	
	Eqlz Voltage	Select maximum EQUALIZE voltage	32.0V	
	Bulk Voltage	Select maximum BULK charge voltage	28.8V	
	Absorb Voltage	Select maximum ABSORPTION charge voltage	28.8V	
	Float Voltage	Select maximum FLOAT charge voltage	27.0V	
	Batt Temp Comp	Select BATTERY TEMPERATURE COMP coefficient	-54mV/C	
	Batt Capacity	Select battery bank capacity	220Ah	
	Max Chg Rate	Select maximum charge rate	100%	
	Charge Cycle	Select 2 or 3 stage charge cycle	3Stage	
	Default Batt Temp	Select system default battery temp setting	Warm	
	ReCharge Volts	Select voltage at which charger will initiate a charge cycle	25.0V	
	Absorb Time	Sets the maximum Absorption time	180min	
	Auto Chg Enable	Select automatic charging, overrides Charger setup	Enabled	
	Chg Block Start	Sets the time to halt charging	12:00AM	
	Chg Block Stop	Sets the time to resume charging	12:00AM	
AC Settings	AC Breaker	Select AC Input current limit	30A	
	AC Lo Volt	Select lowest acceptable AC voltage	190V	
	AC Hi Volt	Select highest acceptable AC voltage	270V	
	AC Lo Freq	Select lowest acceptable AC frequency	55Hz	
	AC Hi Freq	Select highest acceptable AC frequency	65Hz	
	AC Qualify Time	Sets charger waiting time	5sec	
Generator Support	GenSup Mode	Enables Generator Support function	Disabled	
	GenSup Amps	Generator current level at which Generator Support Starts	24A	
Multi Unit Config	Dev Name	Select unique device Name for each unit	CSW4024 CSW2524	
	Dev Number	Select unique device number for each unit	00	
	Invtr Mode	Select Master or Slave designation for each unit	Master	
	AC In	Select AC source type	Gen1	
	Battery	Identify batteries	HouseBatt1	
Restore Defaults	--	Restores all system default settings	--	
Advanced Features	EuroFreq	Sets AC output frequency to 50 Hertz	Disabled	

5 Troubleshooting

The following topics will be covered in this chapter.

- General Troubleshooting Guidelines
- Inverter Applications
- View Device Info Logs
- Troubleshooting the Conext SW via the SCP

General Troubleshooting Guidelines

This section will help you narrow down the source of any problem you may encounter. Please read the following troubleshooting steps:

1. Check for a warning or fault detection message on the SCP or a fault code on the inverter information panel. If a message is displayed, record it immediately.
2. As soon as possible, record the conditions at the time the problem occurred. These details should include the following as well as any other information asked for on the page. These details are:
   - Firmware revision of the Conext SW
   - Type of loads the Conext SW was running or attempting to run
   - Battery condition at the time of fault detection (battery voltage or temperature, for example), if known
   - Recent sequence of events (for example, charging had just finished, AC generator had stopped but the inverter did not come on)
   - Any known unusual AC input factors such as low voltage or unstable generator output
   - Extreme conditions which may have existed at the time (temperature or moisture, for example)
3. Attempt the solution indicated in these guidelines.
4. If your inverter front panel or SCP is not displaying a Fault detection light, check the following list to make sure that the present state of the installation allows proper operation of the unit. Read these guidelines carefully.

❒ Is the Conext SW located in a clean, dry, adequately ventilated area?

❒ Have the AC input breakers opened? If so, your pass-through load may have exceeded the rating of one or more of the input breakers.

❒ Are the battery cables adequately sized and short enough? See the Installation Guide for more information.

❒ Is the battery in good condition and are all DC connections tight?

❒ Are the AC input and output connections and wiring in good condition?

❒ Are the configuration settings correct for your particular installation?

❒ Are the display panel and the communications cable properly connected and undamaged?

❒ Is the battery temperature sensor and its cable properly connected and undamaged?

5. Contact Customer Service for further assistance. Please be prepared to describe details of your system installation and provide the model and serial number of the unit. See the front and/or back of the manual for contact information.

Inverter Applications

The Conext SW performs differently depending on the AC loads connected to it. If you are having problems with any of your loads, read this section.

Resistive Loads

Resistive loads are the easiest and most efficient to drive. Voltage and current are in phase, which means they are in step with one another. Resistive loads generate heat in order to accomplish their tasks. Toasters, coffee pots, and incandescent lights are typical resistive loads. It is usually impractical to run larger resistive loads—such as electric stoves and water heaters—from an inverter due to their high current requirements. Even though the inverter may be able to accommodate the load, the size of battery bank will limit inverter run time.

Motor Loads

Induction motors (AC motors without brushes) require up to six times their running current on startup. The most demanding are those that start under load (for example, compressors and pumps). Of the capacitor start motors (typical in drill presses and band saws, for example), the largest you can expect to run is 1 horsepower. Universal motors are generally easier to start. Check that the Locked Rotor Amps (LRA) rating of the motor load does not exceed the maximum surge current rating of the inverter. Since motor characteristics vary, only testing will determine whether a specific load can be started and how long it can be run.

If a motor does not start within a few seconds or loses power after running for a time, it should be turned off. When the inverter attempts to start a load that is greater than it can handle, the inverter may shut down from an AC overload fault.

Problem Loads

Very Small Loads If the power consumed by a device is less than the threshold of the search mode circuitry, and search mode is enabled, the inverter will not run. Most likely the solution will be to disable **Search Mode** or lower the sense threshold.

Fluorescent Lights (CFL) and Power Supplies Some devices cannot be detected when scanned by search mode circuitry. Small fluorescent lights are the most common example. Some computers and sophisticated electronics have power supplies that do not present a load until line voltage is available. When this occurs, each unit waits for the other to begin. To drive these loads, either a small companion load like a light bulb rated for more than the **Search Watts** setting must be used to bring the inverter out of search mode, or the inverter may be programmed to remain on by disabling **Search Mode**. (See “Using Search Mode” on page 4–11.)

Clocks You may notice that your clocks are not accurate. Some of the clocks on your appliances may reset when the Conext SW is in search mode.

Searching When the inverter is in search mode, it may not start some loads even though the rated wattage on the load is more than the **Search Watts** setting. Disable **Search** or apply an additional load (companion load) to make the inverter exit search mode.

View Device Info Logs

When troubleshooting, it sometimes becomes necessary to look at information logs the Conext SW keeps inside its onboard memory. Each log entry is generated automatically when a “condition” occurs and recorded accordingly in one of the information logs.

The information logs are organized according to:

- Fault detections
- Warnings
- Events

Figure 5-1 View Device Info Log

To view device info logs:

1. From the device **Setup** menu screen, use the up or down arrow buttons to highlight **View Device** Info.
2. Press Enter. The **Dev Info** screen appears.
3. Use the up or down arrow buttons to select which information log you want to view then press Enter to confirm a selection. The log screen appears.
4. Use the up or down arrow buttons to scroll the list then press Enter to view the particular log entry.
5. Press the Exit button to return to previous screens.

Troubleshooting the Conext SW via the SCP

The Conext SW is designed with a number of protection features to provide efficient operation. If, however, you have any problems operating your inverter/charger read this troubleshooting chapter.

If you cannot resolve the problem, record the necessary information. This information will help Customer Service to assist you better when you contact them.

⚠ DANGER

ELECTRICAL SHOCK HAZARD

Do not disassemble the inverter/charger. The Conext SW contains no user-serviceable parts.

Failure to follow these instructions will result in death or serious injury.

When a fault detection or warning message appears, you can acknowledge the message to clear the screen. To acknowledge a fault detection or warning message, press the **Enter** button on the SCP. This action does not clear the fault detection or warning condition, so you should consult Table 5-3 for suggested actions after you have acknowledged the message. Refer to the *System Control Panel Owner's Guide* for more information on faults and warnings.

Fault Detection Types

There are three types of fault detection messages: automatic, manual, and escalating automatic. Table 5-1 describes how they differ in their behavior and how you can respond to them when they appear on the SCP.

Table 5-1 Fault Detection Types and Behaviors

Fault Detection type	Behavior
Automatic	Clears automatically if the fault condition that generated the message goes away. You can also acknowledge automatic fault detections without waiting for them to clear automatically.
Manual	Requires you to clear them by: • Pushing the Clear Fault button on the Conext SW or on the device that generated the fault detection (if the fault condition still exists, the fault detection message reappears), and • Correcting the condition that caused the fault

Table 5-1 Fault Detection Types and Behaviors

Fault Detection type	Behavior
Escalating automatic	Clears automatically if the fault condition goes away, just like an automatic fault detection. However, if an escalating automatic fault detection occurs several times within a defined time period, the escalating automatic fault detection becomes a manual fault detection, requiring user intervention. For example, if three fault detections occur in one minute, it will no longer clear itself but becomes a manual fault detection. Then you must identify the problem, correct the fault condition, and clear the fault detection or reset the device.

To view a list of the detected faults:

1. On the **`Select Device`** menu, highlight **`System`** and press Enter.
2. On the **`System Settings`** menu, highlight **`View Fault List`**.
3. Press Enter.

Warning Types

There are two types of warnings: automatic and manual. When the Conext SW detects a warning condition, it displays a warning message on the SCP.

Table 5-2 describes how they differ in their behavior and in how you can respond to them when they appear on the SCP.

Table 5-2 Warning Types and Behavior

Warning type	Behavior
Automatic warning	Clears automatically if the warning condition that generated the message goes away. You can also acknowledge automatic warnings without waiting for them to clear automatically.
Manual warning	Requires you to acknowledge it before you can proceed with configuring or operating the Conext SW. Manual warnings are usually in the form of a Yes/No question that you may acknowledge by pressing the **Enter** button on the SCP for Yes and the **Exit** button for No. Refer to the *System Control Panel Owner's Guide* for more information.

To view a warning list:

1. On the **`Select Device`** menu, highlight **`System`** and press Enter.
2. On the **`System Settings`** menu, highlight **`View Warning List`**.
3. Press Enter.

Table 5-3 provides a detailed description of the fault detection messages and solutions. If you are unable to resolve the problem after referring to this table, contact customer service.

Table 5-3 Fault Detection Messages

Code	Message	Type	Cause	Solution
F1	AC Output under voltage	Escalating Auto fault detection. Must occur 3 times in 30 seconds before becoming a manual fault detection.	Inverter voltage is under 210 volts.	Remove excessive load.
F2	AC Output over voltage	Escalating Auto fault detection. Must occur 3 times in 30 seconds before becoming a manual fault detection.	Inverter voltage is over 255 volts.	Check if there is an external power source that is running parallel to the inverter's output.
F17	AC Backfeed (L1)	Manual	AC backfeed from welded relay on Line 1.	Service required.
F18	AC Backfeed (L2)	Manual	AC backfeed from welded relay on Line 2.	Service required.
F44	Battery Over Temperature	Automatic	Battery temperature is over 140 °F (60 °C). Poor battery compartment ventilation.	Stop charging if necessary. Check cable connections. Check battery voltage/current and temperature. If battery is not accepting charge, it may need to be replaced. Check for excessive ambient temperature and adequate ventilation in the battery compartment.
		Automatic	BTS may be damaged.	If the unit displays a temperature of over 212 °F (100 °C), the BTS will need to be replaced.

Table 5-3 Fault Detection Messages

Code	Message	Type	Cause	Solution
F47	DC Under Voltage (Immediate)	Automatic	Immediate battery under voltage fault.	Check battery condition (short or open cells) and ensure correct voltage. Battery state charge or capacity is so low that the DC voltage collapses when inverter load is applied. Inverter load is so large that the DC voltage collapses when inverter load is applied.
F48	DC Under Voltage (Fault)	Automatic	Voltage at the DC input terminals is below the Low Battery Cut Out (LBCO) setting for 10 seconds.	Check for the correct battery voltage at the inverter's DC input terminals. Check for external DC loads on the batteries. Check condition of batteries and recharge if necessary. Reduce the Low Battery Cut Out (LBCO) setting. Battery bank capacity may be inadequate for the loads in the system.
			Battery is discharged.	Charge the battery.
F49	DC Over Voltage	Escalating Auto fault detection. Must occur 3 times in 30 seconds before becoming a manual fault detection.	Voltage at the DC input terminals is above the High Battery Cut Out Setting	Clear the fault and attempt restart. Ensure battery voltage is 21–33 VDC (default settings) at Conext SW terminals. Check all other charging source outputs, battery cables.
F52	EE ERROR Cal Fail	Manual	A problem has been detected with the internal memory.	Clear the fault and check the latest configuration made or any recent configurations. If fault detection reoccurs or occurs frequently, service is required.
F53	EE ERROR Config Fail			
F55	EE ERROR Log Fail			
F56	EE ERROR Strings Fail			

Table 5-3 Fault Detection Messages

Code	Message	Type	Cause	Solution
F57	FET1 Over Temperature	Automatic	Ambient temperature may be too high.	Ensure adequate ventilation around the Conext SW. Allow inverter to cool down and try restarting.
			Operating too large of a load for too long while inverting.	Remove excessive inverter loads.
			Inverter cooling fan may have stopped working.	If the temperature is above 104 °F (40 °C), the fan should be on. Hold your hand or a piece of paper to the inverter vent to check if the fan is working. Both fans should be active at the same time.
			Inverter airflow intake may be blocked.	Increase the clearance around the inverter and/or unclog the airflow intake vents.
F58	FET2 Over Temperature	Automatic	Same as **F57**.	Same as **F57**.
F63	Power Board Temp unreadable.	Automatic	Temperature sensor is damaged.	Service required.
F64	AC overload	Escalating Auto fault detection. Must occur 3 times in 60 seconds before becoming a manual fault.	Persistent excessive inverter current above rated current.	Avoid loads with long surge current.
F68	Transformer Over Temperature	Automatic	Same as **F57**.	Same as **F57**.
F70	Unique Dev# Needed	Automatic	In a Multi Unit configuration, if two or more units have the same device number.	Assign a unique device number for each unit. See “To set the Conext SW device number:” on page 4–26.
F71	Too Many Masters	Automatic	In a Multi Unit configuration, if more than one unit is configured as Master.	There can only be one Master unit. Assign the other units as Slave. See “Multi Unit Config Menu” on page 4–23.

Table 5-3 Fault Detection Messages

Code	Message	Type	Cause	Solution
F73	Transformer Temp unreadable	Automatic	Temperature sensor is damaged.	Service required.
F74	Other Unit Invert Fault	Automatic	In a Multi Unit configuration—if one of the units detects a fault that needs to be resolved.	Clear the primary fault on the unit that caused this fault to be detected.
F75	Master Inverter Lost	Automatic	In a Multi Unit configuration—if the Slave unit cannot detect the Master unit in the Xanbus network.	Make sure that the two units are connected in the same Xanbus network. Check cable connections and ensure that the plugs are neatly inserted in the ports. Check if the Xanbus network is properly installed with network terminators.
F76	No Masters	Automatic	In a Multi Unit configuration, if all units are configured as Slave.	Assign the other unit as Master. See “Multi Unit Config Menu” on page 4–23.
F79	Battery Sensor Short	Automatic	The BTS has been damaged.	Replace the BTS.
F85	PowerBoard Over Temperature	Automatic	Same as **F57**.	Same as **F57**.
F86	Dead Battery Detected	Automatic	When only Line 1 is qualified and a dead battery condition is detected.	Both Line 1 and Line 2 must qualify to charge the battery.
F87	Inconsistent Frequencies	Automatic	In a Multi Unit configuration—if all units are not configured to the same AC frequency output.	Configure all units to the same AC frequency output. See “Using the Advanced Features” on page 4–28.
F88	MPPT Ground Fault	Automatic	In a Xanbus network, an MPPT has detected a ground fault **F56**.	Check the MPPT and clear the ground fault **F56**.

Table 5-3 Fault Detection Messages

Code	Message	Type	Cause	Solution
F93	Wrong Batt Temperature Sensor	Automatic	An unknowns BTS was plugged into the BTS port.	Use only the BTS that was provided with the Conext SW Inverter/Charger. To order, use product number 808-0232-02.

Table 5-4 provides a detailed description of the warning messages and solutions. If you are unable to resolve the problem after referring to this table, contact customer service.

Table 5-4 Warning Messages

Code	Message	Fault Type	Cause	Solution
W48	DC under voltage (Warning)	Automatic	Voltage at the DC input terminals is below the Low Battery Cut Out (LBCO) setting.	Check for the correct battery voltage at the inverter's DC input terminals. Check for external DC loads on the batteries. Check condition of batteries and recharge if necessary. Reduce the Low Battery Cut Out (LBCO) setting. Battery bank capacity may be inadequate for the loads in the system.
W69	AGS not connected	Automatic	The **GenSup Mode** setting is enabled but there is no AGS connected in the Xanbus network.	Install an AGS on the network or disable the **GenSup Mode** setting.

6 Specifications

NOTE: Specifications are subject to change without prior notice.

Inverter Specifications

NOTE: All inverter specifications are at nominal conditions: ambient temperature of 77 °F (25 °C), 24 VDC, unless otherwise specified.

AC Output	**SW 2524 120/240**	**SW 4024 120/240**
Output waveform	true sine wave	true sine wave
Continuous output power (AC) - Maximum - 30 minutes	 2500 W 2700 W[a]	 3400 W 4000 W[b]
Maximum continuous output current	11 A	15 A
Surge power rating (5 seconds)	5000 W[c]	7000 W[d]
Inverter peak output current	24.3 A	41 A
AC OUTPUT connection	Split-phase (L1/L2)	Split-phase (L1/L2)
Peak efficiency	91.5%	92%
Output power factor (capacitive or inductive)	0 to 1	0 to 1
Operating voltage range single-phase/split-phase	104/208 VAC to 127/254 VAC	104/208 VAC to 127/254 VAC
Nominal voltage single-phase/split-phase	120/240 VAC	120/240 VAC
Operating frequency range	selectable 50 or 60 Hz	selectable 50 or 60 Hz
Default output frequency	60 Hz	60 Hz
DC Input	**SW 2524 120/240**	**SW 4024 120/240**
Voltage range	20–34 VDC	20–34 VDC
Maximum continuous power voltage range	22–27 VDC	22–28 VDC
Maximum battery current	150 A	230 A
No-load power draw (Inverter On)	38 W	40 W
Low battery voltage shutdown cut-off (other values selectable)	21.0 V (default)	21.0 V (default)
High battery voltage shutdown cut-off (other values selectable)	33.0 V (default)	33.0 V (default)

a.2700 W for 30 minutes, 0 W for 30 minutes.
b.4000 W for 30 minutes, 0 W for 30 minutes.
c.5000 W for 5 seconds, 2500 W for 300 seconds.
d.7000 W for 5 seconds, 3500 W for 300 seconds.

Charger Specifications

NOTE: All charging specifications are at nominal conditions: ambient temperature of 77 °F (25 °C), split-phase 120/240 VAC, 60 Hz unless otherwise specified.

DC Output	**SW 2524 120/240**	**SW 4024 120/240**
Maximum output current	65 A	90 A
Nominal output voltage	24 VDC	24 VDC
Charging output voltage operation range	12.0–32.0 VDC	12.0–32.0 VDC
Equalization cycle	Automatic, Manual by SCP	Automatic, Manual by SCP
Optimal charging efficiency	90%	90%
Dead battery charge voltage	> 12.0 VDC	> 12.0 VDC
Charging methods (two settings)	Three-stage charge (Bulk, Absorption, Float) [default] Two-stage charge (Bulk, Absorption)	
Without a battery temperature sensor (three settings)	Cool 50 °F (10 °C) Warm 77 °F (25 °C) [default] Hot 104 °F (40 °C)	
With a battery temperature sensor (provided)	The temperature compensation coefficients on a 24-volt battery are as follows: Flooded: 54 mV × (25 °C – BTS °C) Gel: 54 mV × (25 °C – BTS °C) AGM: 42 mV × (25 °C – BTS °C)	
AC Input	**SW 2524 120/240**	**SW 4024 120/240**
Power factor at full charge rate	> 0.98	> 0.98
Current	9 A	13 A
Voltage	120/240 VAC	120/240 VAC
Voltage range single-phase/split-phase	95/190 VAC to 135/270 VAC	95/190 VAC to 135/270 VAC
Frequency range	44 – 70Hz	44 – 70 Hz
AC INPUT Connection	Split-phase (L1/L2)	Split-phase (L1/L2)

AC Transfer Specifications

NOTE: All transfer specifications are at nominal conditions: ambient temperature of 77 °F (25 °C), split-phase 120/240 VAC, 60 Hz input, unless otherwise specified.

	SW 2524 120/240	SW 4024 120/240
Transfer time—utility to invert	< 20 ms	
Relay current rating	30 A[a]	
Minimum line-to-neutral AC input voltage for transfer	95 VAC RMS	
Maximum line-to-neutral AC input voltage for transfer	135 VAC RMS	
Minimum AC input frequency for transfer	44 Hz	
Maximum AC input frequency for transfer	70 Hz	
Cooling	Fan-cooled, temperature controlled	

a.Limited by SCP to 24 A due to CEC/NEC regulatory requirements.

Physical Specifications

	SW 2524 120/240	SW 4024 120/240
L × W × H	15.2×13.5×7.6 in (387×343×197 mm)	15.2×13.5×7.6 in (387×343×197 mm)
Net Weight	62 lbs. (28 kg)	76 lbs. (34.5 kg)

Environmental Specifications

	SW 2524 120/240	SW 4024 120/240
Nominal ambient temperature	77 °F (25 °C)	
Operating temperature range	–4 to 140 °F (–20 to 60 °C) starts derating above 77 °F (25 °C) (see following graph)	
Storage temperature range	–40 to 185 °F (–40 to 85 °C)	
Humidity: Operation/Storage	≤ 95% RH, non-condensing	
Ingress protection rating	Indoor only, IP 20	
Pollution degree	3	
Over voltage category (AC mains)	CAT III	
Altitude: Operating	6,562 ft. (2,000 m)	
Mounting	wall mount using installation bracket	

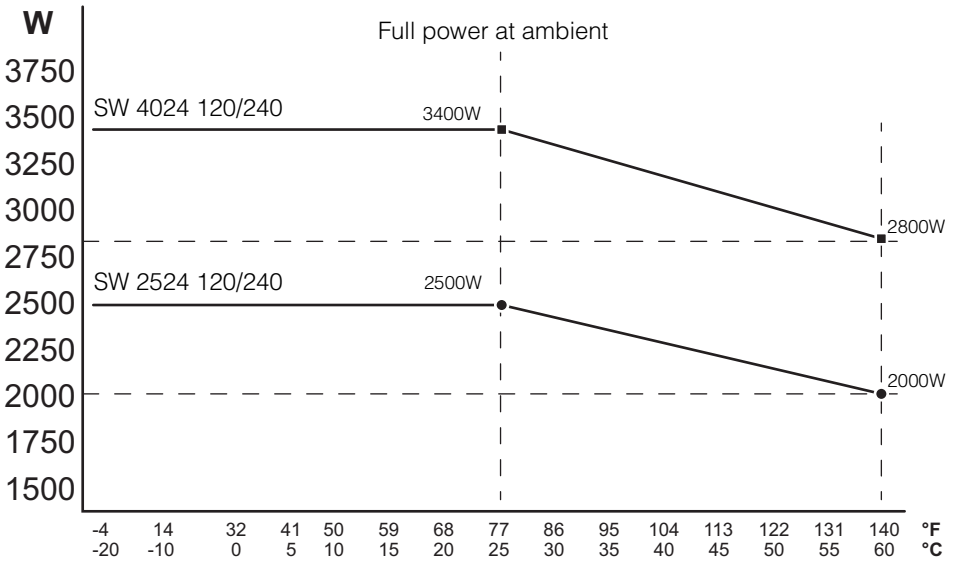


Figure 6-1 Output Power versus Temperature Derating Graph

Regulatory

	All Models
Safety	UL 1741 Ed. 2 CSA C22.2 NO. 107.1-01
EMC	FCC Part 15, Class B Industry Canada ICES-0003, Class B

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975-0638-01-01 Rev A

Printed in China